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JANUARY 1986
VOLUME 4
NUMBER 1

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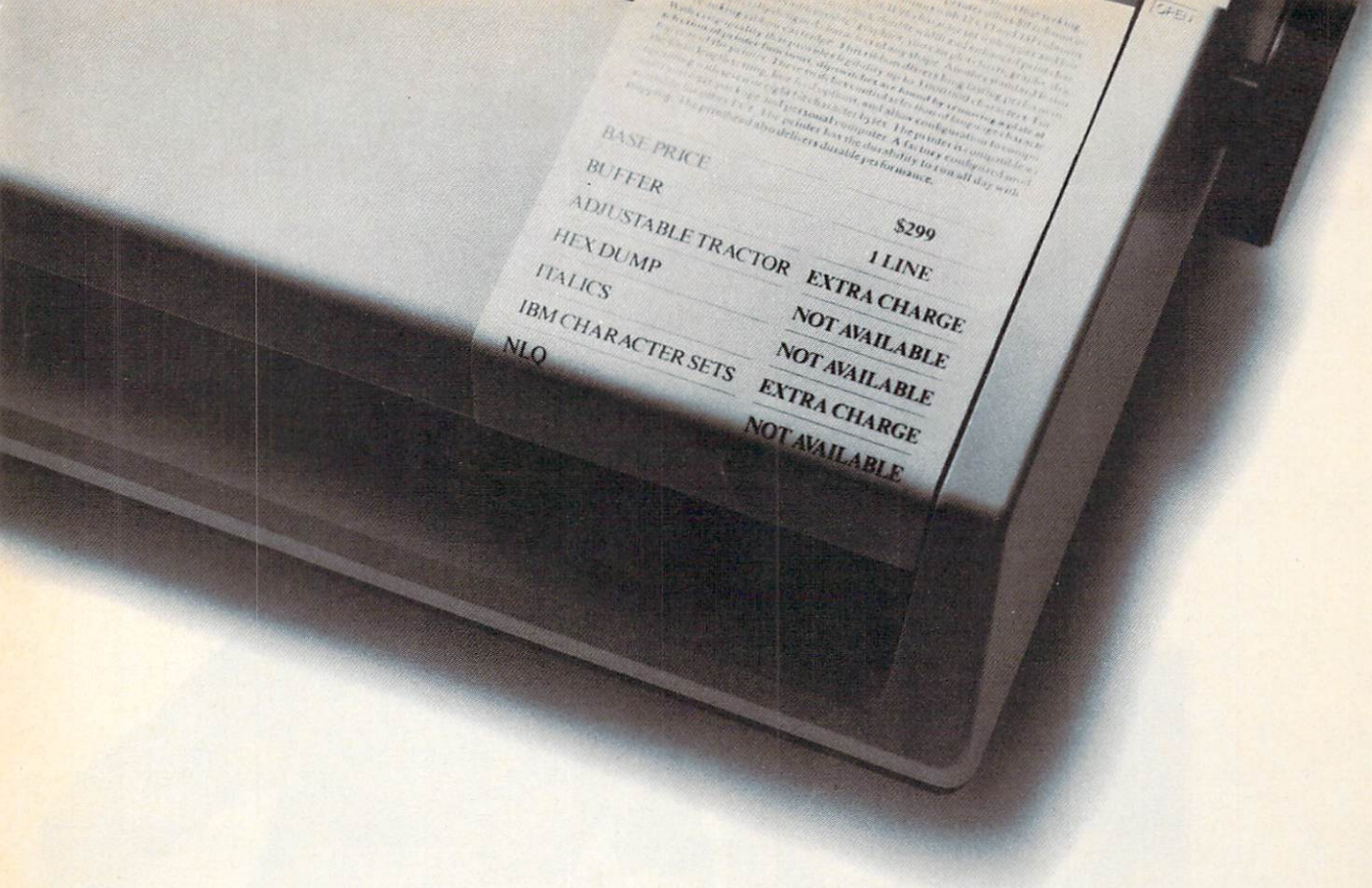

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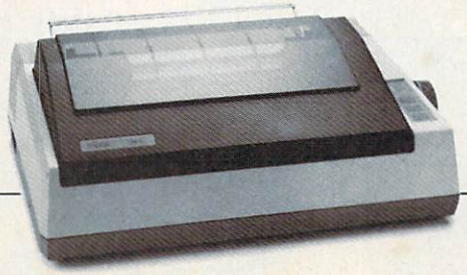

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CIRCLE READER SERVICE 33

PUBLISHED BY SCHOLASTIC INC.

JANUARY
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VOLUME 4
NUMBER 1

FAMILY COMPUTING®

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FAMILY COMPUTING (ISSN 0738-6079) is published monthly by Scholastic Inc., 730 Broadway, New York, NY 10003. Subscriptions: in the U.S. and possessions, 12 issues for $19.97; outside the U.S. add $6 (surface mail) or $25.97 (airmail). Office of publication: 351 Garver Rd., P.O. Box 2700, Monroe, OH 45050-2700. Second-class postage paid at Monroe, OH 45050-9998 and additional offices. POSTMASTER: Send address changes and notice of undelivered copies to FAMILY COMPUTING, P.O. Box 2511, Boulder, CO 80302. Printed in U.S.A. Copyright © 1985 by Scholastic Inc. All rights reserved.

COVER PHOTOGRAPH BY ANTHONY LEOW

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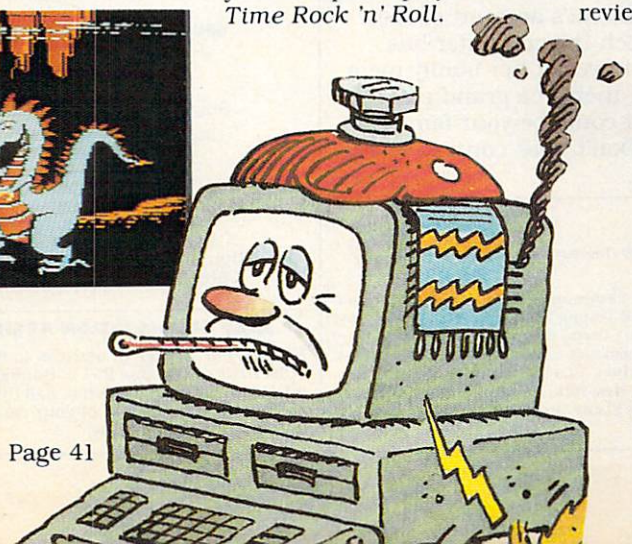

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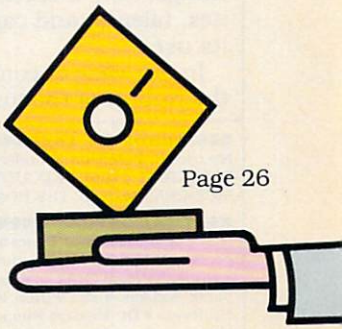

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EDITOR'S NOTE

THE GROWING FAMILY

Just about the time this issue drops into your mailbox or reaches the newsstand, there'll be a lot of computer-counting. Will the Christmas season have delivered the buying public or not? That's the count. But it's not all that *counts*.

While all the teeth-gnashing and hand-wringing has been going on, with other magazines swinging from one branch of the computing tree to another, we've been steadily enhancing our family nest. And our family's been growing.

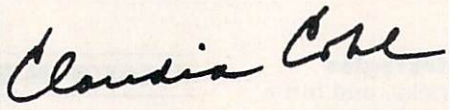
Even since the last issue, when I reported that our circulation was just over 400,000, the number has gone up. Now it's 410,000, with an actual readership of nearly 1.7 million adult readers, *plus* 1.3 million teens. And, we hope, the numbers are still growing. What's causing this growth, seemingly against the tide of the industry and of other magazines?

Ordinarily, I'd resist trying to figure it out—at least publicly—but what better time for stock-taking than the New Year? So here it is:

FAMILY COMPUTING has, from its beginning, maintained a commitment to the vision families have for the computer—as a tool that will help their members learn; earn; use time, money, and other resources more effectively; and share their experiences with one another, thereby enhancing the family as a whole. We have viewed that commitment as a dedication to the long view, of the computer as a means of improving our lives, of changing the way we do things, and of extending our abilities, talents, and capacities through its use.

In our view of computing, home is the hub. It is the junction where school and work and fun meet. And, as a result, there are no limits. No limits of use, no limits of machines, no limits of ability. To meet the needs of our families of readers, we present them with the full range of options—both for use and for products. From the beginning, we resisted proddings to limit ourselves to home computers—we were instead concerned with computing in the home.

From the beginning, we have been dedicated to breaking down barriers—all of them artificial—of age, occupation, race, sex, and place. That is what we must do to bring about successful computing in the family. The men and women in our families must know success, as well as the boys and girls, the young and old, members of the work force and students, all engaged in a wide variety of computer activities, no matter where. While you, our readers, are devoted immediately to the good of the small family unit, ultimately we share the large concern of the future of us all.



CLAUDIA COHL
EDITOR-IN-CHIEF

P.S. Last year we initiated our Computing Family of the Year Contest. The Mancinis of Long Island, New York, were 1985's winning family. Kate Mancini's account of the ways in which the computer has changed the lives of her family members earned them the grand prize. This year, it could be your family that wins. Don't miss contest details on page 52.

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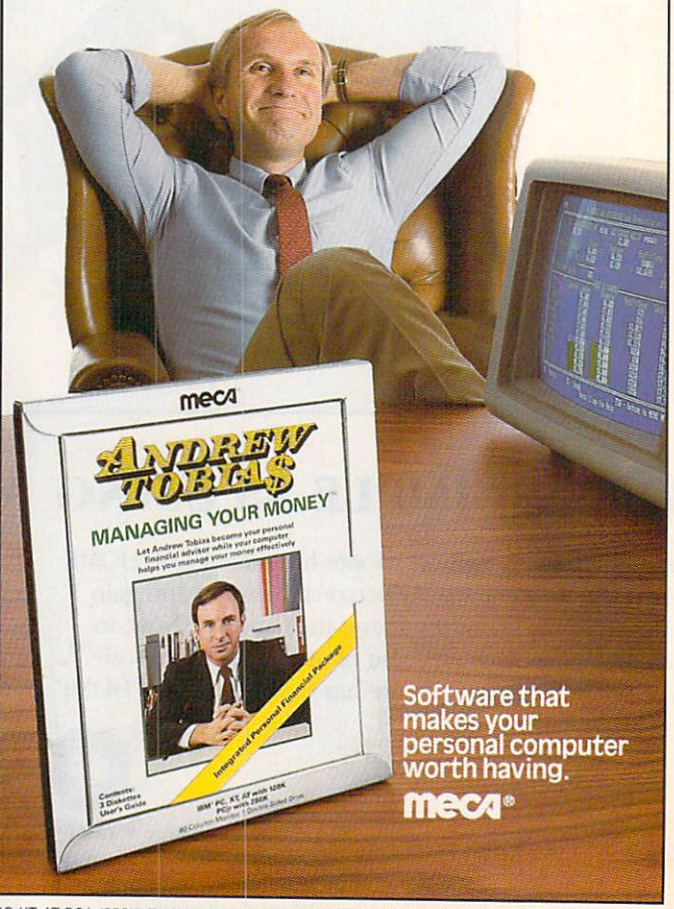

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CIRCLE READER SERVICE 31

LETTERS

ALL SOLD OUT

I'm trying to buy a new printer. I have a special one in mind, Okidata's Okimate 20. I've found some dealers, but they were all sold out. Do you know of any dealers who would have this printer?

SONG KANG
Alexandria, Virginia

EDITOR'S NOTE: *If the dealers in your area do not have the product you want to buy in stock, try calling the manufacturer, who will often be able to tell you where you may have better luck. You can write to Okidata at 532 Fellowship Road, Mt. Laurel, New Jersey 08054, or call (800) OKIDATA. In addition, since you know exactly what you want, look at mail-order ads. You'll probably save money in the short run, but you might miss the convenience of having a local dealer to turn to if you need repairs or service. We suggest you read "Mail-Order Made Safe" on page 97 before taking the plunge.*

PROGRAMS FOR THE C 128

You claim you are publishing programs that will run on the Commodore 128. This is true, though misleading. I own a C 128 system and every program you publish for it is a Commodore 64 program that will run on the C 128, as will any C 64 software, no matter what the format.

Will you publish any programs for the computer in C 128 mode? The graphics and sound capabilities are tremendous and easy to implement, far surpassing those of the C 64. And the lack of the C 64's PEEKs and POKEs makes it a dream to program.

VINCE HATFIELD
Port Orchard, Washington

EDITOR'S NOTE: *We, too, are impressed by the C 128's capabilities and sophistication. However, there is still a relatively small installed base of C 128s, and a huge one of C 64s. At this time, we feel our only option is to carry programs that run on both machines. Of course, we're interested in seeing what the C 128 can do, so if you have a good program specifically in C 128 mode, we'd love to see it.*

COMPLETELY HOOKED!

I've been receiving FAMILY COMPUTING for one year now, and I'm hooked! How do you do it? FAMILY COMPUTING isn't like all of the other *boring* computer magazines. It's exciting! I've had to order two subscriptions because after I get almost done with one, it's in tatters. Also, I have reason to suspect that the postman reads it. I especially like the programs in the magazine. I type them all into my Commodore 64 at home and save them on my FAMILY COMPUTING disk. I even made a menu program for them! It's hard to keep the magazine away from the rest of my family long enough for me to read it!

Your magazine's way up there with *TIME* on my list! I only wish you'd manufacture it a bit stronger.

KEVIN CHAMBERS
Duluth, Minnesota

THE FRANKLIN IS BACK

I read your magazine and soon I will be getting a computer, the Franklin 1000. I was wondering if you could find some information on this machine. If you could, it would be greatly appreciated. Your magazine is the *greatest* of all.

MICHAEL W. KOREEN
N. Huntington, Pennsylvania

EDITOR'S NOTE: *According to Franklin Computer Corp., the Franklin Ace 1000 is no longer on the market. A new model, the Franklin Ace 2000, however, is being sold, and Franklin says it's compatible with 95 percent of Apple software. For more information, check out this month's hardware section of What's In Store.*

CORRECTION

In the November FAMILY COMPUTING article, "Word Processors: New Tools for an Age-Old Task," we published an incorrect rating for the Atari version of *PaperClip* by Batteries Included. The overview for file-handling, printer functions, and documentation should have been a rating of excellent.

FAMILY COMPUTING *looks forward to letters from all our readers. Please direct your correspondence to: Letters to the Editor,* FAMILY COMPUTING, *730 Broadway, New York, NY 10003. Include your name, address, and phone number. We reserve the right to edit letters for length and clarity. Due to the large volume of mail we receive, we are not able to respond personally to every letter.*

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HOME-SCHOOL CONNECTION

COMPUTERS ON CAMPUS
Replacing Typewriters, But Not Teachers

BY ANN E. LAFORGE

When I was in college, most humanities students thought of computers as strange machines hidden deep within the science building, where few of us ever ventured. We knew that they existed, but had only vague ideas of their use, and certainly didn't dream we'd ever own or operate them ourselves.

I trekked back to Boston this past spring for my fifth-year reunion. There I overheard journalism majors extolling the virtues of word processing and graduate management students speaking about IBM PCs as though they were calculators. On my sentimental journey through the library, I was stopped in my tracks by a fleet of Apple IIs, docked firmly where the card catalog used to be.

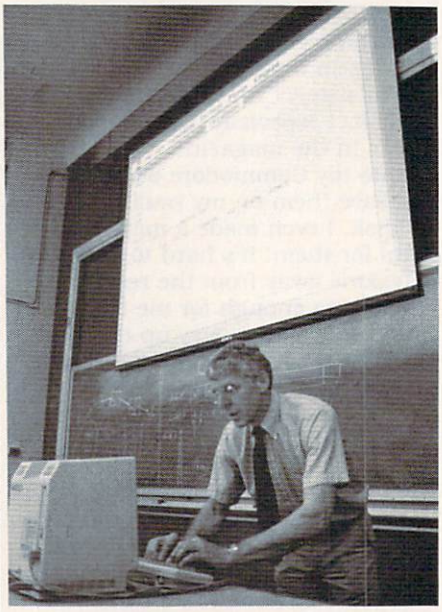
Clearly, what has happened in the few short years since I left the halls of higher education is nothing short of a revolution. Colleges and universities have become serious about preparing all of their students—not just the science/math specialists—for the computerized world outside the classroom. Today, anyone who is entering college or preparing for graduate school can expect his or her studies to include close encounters with computers.

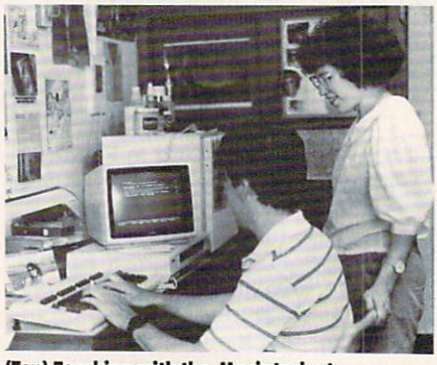
As a rule, there are three levels of campus computerization: schools that require computer use in the curriculum; schools that promote use by integrating the computer into supplementary coursework; and schools that provide introductory exposure but haven't as yet incorporated computer use into general studies.

SCHOOLS THAT REQUIRE COMPUTER USE

Currently, there are only a handful of institutions that require students to own computers. Most of these are technical or specialty schools, such as Clarkson University and the Georgia Institute of Technology.

Drew University is the only leading liberal arts institution that provides students with computers. All incoming freshmen find Epson QX-16 computers and *Valdocs* integrated software awaiting them in their dorm rooms. They are expected to acquire basic, nontechnical computing skills, such as word processing, as part of their fundamental liberal arts education. Often, the students are given sophisticated assignments on computer disks, which professors can use to track their progress.





(Top) Teaching with the Macintosh at Dartmouth College; (bottom) students automatically receive a computer and software at Drew University.

SCHOOLS THAT ENCOURAGE COMPUTER USE

Although applications to Drew increased by 49 percent following the computer requirement policy, few other liberal arts institutions are ready to follow its lead. The main reason is that there still isn't one computer that can meet the needs of all students. The best computer for a business major, for instance, may be the worst for someone studying art or dance.

Another consideration is money: Most colleges are not eager to tack on an extra $2,000 or more to already astronomical tuition fees.

To offset the high cost of computers for students, some 20 percent of the nation's more than 3,000 colleges and universities are working with Apple, IBM, and other manufacturers to provide substantial discounts on equipment. A leader in this is Dartmouth College, which in 1984 inaugurated a program to provide every incoming freshman with the chance to buy a Macintosh at 40 percent off the list price. The cost of the computer is built into financial aid grants for needy students.

According to Dr. Agnar Pytte, Dartmouth's provost, more than 80 percent of the class of 1988 bought computers last year.

As soon as they settle into their dorm rooms, Dartmouth students are able to communicate with one another and their professors via a campus-wide computer network. They can use the computer to receive homework assignments, mail, and grades electronically, and even research library holdings.

Faculty members who want to integrate the Macintosh into course curriculums are provided with computers and, in some cases, the aid of students who understand programming and can turn a professor's ideas into software. The result of these ventures is "courseware" like *SocStat* and *AppleTones*.

In *SocStat*, students work with data sets from actual surveys and complete elementary statistical analyses. The results of each analysis appear in a window, along with specifications for that analysis. Windows can be printed and handed in as homework. *AppleTones*, a music-building program, enables students to develop musical pieces by selecting bars from a palette of single notes, chords, glissandi, etc. For each bar, the timbre, volume, and duration may be changed. The re-

ANN LAFORGE *is a freelance writer living in New York.*

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- practice in classifying by size

Happy Birthday, Pockets!
Eight games and activities featuring

- Birthday presents to wrap and rewrap
- practice in matching simple and complex shapes
- practice in matching numerals
- practice in matching capital and lower case letters

Come Play with Pockets
Six games and activities featuring

- building blocks to move and stack
- practice of visual memory skills
- visual tracking

Pockets Goes on a Picnic
Six games and activities featuring

- wild flower seeds to plant and grow
- practice in putting pieces together to make whole things
- practice in associating by category

Pockets Goes on Vacation
Six games and activities featuring

- a private plane for piloting in all directions
- identification of the positions In, Out, Next to, Over, Under, Right, and Left

*IBM® PCjr

The Fun (ages 6 to 10)

Mighty Math
An arithmetic skills review program featuring

- practice in adding, subtracting, and multiplying
- practice in determining the place value of numbers
- practice in building sets

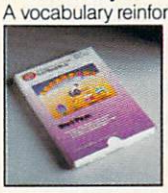
Plot-a-Point
An arithmetic practice featuring

- use of the number line to add, subtract, and multiply
- practice in plotting coordinates

A-mazing Words
A spelling review program featuring

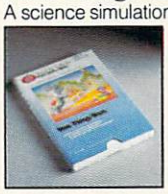
- mazes and monsters
- four levels of difficulty
- a special "Build a Word" option

Word-Player
A vocabulary reinforcement program featuring



- practice in the spelling of new words
- the opportunity to use new words in context
- a "Create Your Own Story" option

How Things Work
A science simulation program featuring



- animation of simple machines
- use of simple machines to solve problems

Take Me North
A map skills review program featuring

- practice in using cardinal and intermediate directions
- practice in interpreting map symbols

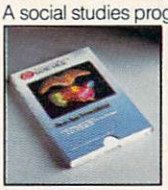
Space Port
A visual memory skills review program featuring

- practice in remembering sequences
- nine levels of difficulty

*IBM PCjr. (Apple® IIe, IIc in December)

The Challenge (ages 10 and up)

Run for President
A social studies program featuring



- review of geography facts about the United States
- a review of U.S. state facts

Settling America
A survival simulation program featuring

- practice in making value judgements
- practice in making decisions
- helps expand knowledge of post-Revolutionary America

Spell Bound
A critical thinking skills review program featuring

- vocabulary reinforcement through use of verbal analogies
- four levels of difficulty

Fast Break
A punctuation skills review program featuring

- explanation of commonly used punctuation marks
- practice in using punctuation marks in context
- four levels of difficulty

WhizCalc I
An arithmetic skills review program featuring

- practice of basic arithmetic operations
- nine levels of difficulty
- a "Create Your Own Problems" option

WhizCalc II
An arithmetic comprehension program featuring

- practice in solving arithmetic word problems
- a database of over 100 word problems
- exposure to a junior spreadsheet

Data Hurdles
A data use skills review program featuring

- ten activities that review ordering, rounding, sets, totals, fast math, time, money, percentages, measuring, and comparing
- on-screen tutorial skill reviews
- three levels of difficulty

*IBM PCjr, Apple IIe, IIc

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CIRCLE READER SERVICE 57

sulting piece may be played on the computer, saved, or edited.

Even for courses that don't yet include special software, students are using computers to lighten the load and improve their work. One ongoing study shows that Dartmouth computer-owners use their machines for word processing about 75 percent of the time.

A study of the effects of computers on student performance in 10 large, introductory courses at Dartmouth didn't show an advantage for computer owners over nonowners. But professors and students agree that the ease of revision afforded by word processing helps students perfect their work.

Kristin Haynes, a sophomore English major, has used her Macintosh for serious school work since her first writing assignment. "I think that in some cases the computer has bettered my grades," she comments. "It has been especially helpful in biology and chemistry, where I have been able to submit lab reports with detailed tables and diagrams. I can pass in neat, easy-to-read papers that look professional and make a good impression on professors. The computer also makes it very easy to revise papers for better marks."

Increasing student exposure to computers in courses is a goal of many schools in this category. At the Massachusetts Institute of Technology, for instance, some 70 curriculum-development projects are under way. In one, students are learning to improve their conversational French by simulating a search for an apartment in Paris. The students read French classified ads, talk to prospective landlords, and find their way through the city, all by computer.

At the few colleges with inter-campus networks, faculty-student communication has taken on a new form. At one institution, a professor who was ill was able to assign and collect homework by electronic mail, and correct the work while bedridden.

SCHOOLS THAT PROVIDE ACCESS BUT MAKE NO DEMANDS

Less than one third of the nation's colleges and universities are in a position to require students to buy computers or to aggressively develop computer programs for courses. The rest of the schools are still in varying stages of training professors in computer literacy, developing a school-wide computer philosophy, beefing up public terminal clusters, and planning for the day when computers will replace typewriters in dorm rooms.

On the majority of these campuses, use of computers is more often than not limited to homework assignments that can be completed on commercial software.

A good example of this level of campus computerization is my alma mater, Simmons College, a small, liberal arts school for women. "Our philosophy is that there are certain modern information management tools that everyone who graduates from college should know how to use," says Dr. Leonard Soltzberg, a chemistry professor and coordinator of academic computing. "We have just opened a new microcomputer lab and classroom." Instructors offering workshops there on word processing, spreadsheet analysis, and computer graphics use large electronic blackboards to project video images of their own computer screens to the entire class. Students can use the public terminals on a drop-in basis, and can borrow from the school's stock of *MacWrite*, *Multimate*, *Jazz*, and *Lotus 1-2-3* software.

At Drake University, which doesn't yet have a firm policy on computer purchase or use, journalism students use Zenith computers for newswriting labs, while business majors take a required introductory computer course. Education and law majors also get exposure to computers through special labs. Dr. Robert Lutz, director of computer services, says, "I believe the computer should be integrated into the curriculum of all individual majors. Anybody involved in intellectual pursuits has use for computer support. The machines will have a major impact on curriculum and how students work in the future."

As Tony Gambino, research associate for The Urban Institute in Washington, D.C., observes, "High school graduates are now looking for computer-rich campuses. In fact, many students are better at computers than their professors and can run circles around them."

There is a long way to go before computers become as affordable and popular on campuses as typewriters, and schools establish interconnecting electronic networks. But, with the use of computers in the working world increasing rapidly, there is little doubt that colleges and universities will find the means to move into the computerized future. FC

SHOULD YOU BRING A COMPUTER TO COLLEGE?

A question every prospective undergraduate and graduate student has in mind by now is, "Do I need my own computer for school?"

In general, the answer to that will depend upon which college you choose and the amount of money you have left in your budget after paying tuition.

The decision, of course, will be easy if you go to a school that requires the purchase of a computer. You'll be expected to figure the machine's price into your tuition. If you receive financial aid, the cost of a computer will probably be included in the package.

But if you opt instead for a college or university without a computer purchase requirement, you still have a few options:

1. You can beg your family to surrender the home computer for your use at school.

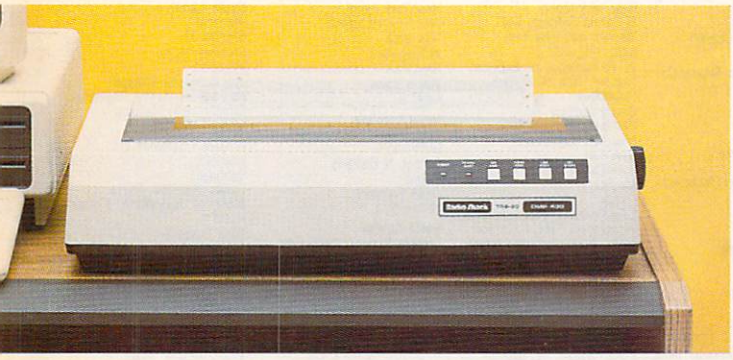
2. You can ask the school you plan to attend about the availability of public terminals. According to the New York-based Talmis, a research center, most colleges and universities with computers are shooting for a ratio of one terminal for every 17 students. Unfortunately, as of January 1985, the average ratio nationwide was only about 1:36.

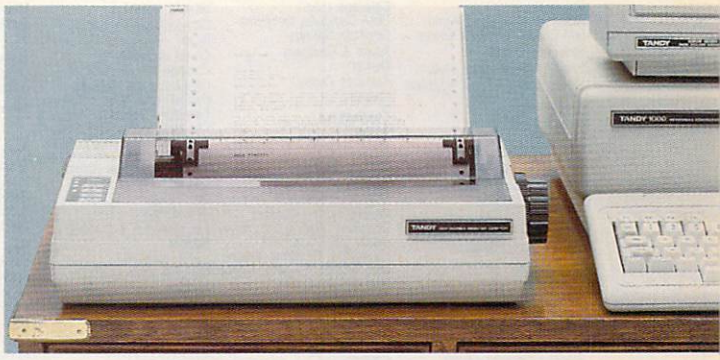
3. You can look for a roommate or friend who has a computer and is willing to share. That's how Elden Hodges, a sophomore studying government and economics at Dartmouth, has survived without a computer. "I've always been able to use the computer centers or borrow machines from other students," he says.

4. You can buy a computer. Bill Curran, a senior at Clarkson University, made that decision, and he says he has never regretted it. As he notes, "[Having a computer] has made college life a lot easier to handle."

Don't be too eager, though, to buy a computer before you get to school. If you aren't sure what kind of work you'll be doing or what your major will be, it may be wiser to wait until you can more accurately judge which is the best machine for your needs.

Next to your computer,





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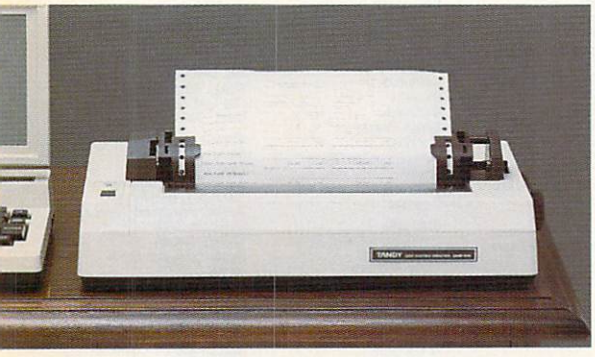

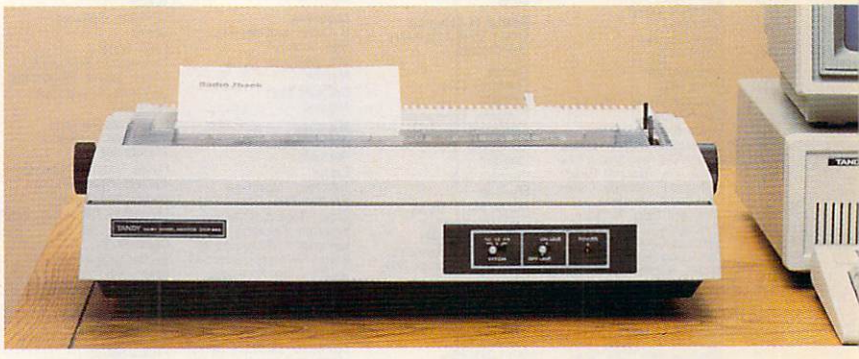

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Cleveland

Oklahoma
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Tulsa and Oklahoma City
Videocomp
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Warwick

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Memphis

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San Antonio
Videoland
All locations

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Software Center
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Software Hut
Salt Lake City
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MINDSCAPE

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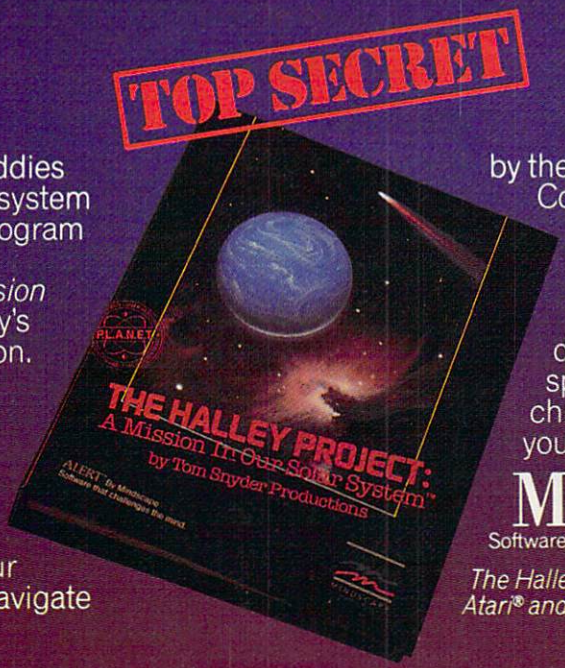

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CIRCLE READER SERVICE 34

Where to find and buy ColorMe: The Computer Coloring Kit.

National
Available at all Child World and Children's Palace Stores
Federated Group
K-Mart — Most larger stores
Montgomery Ward — Most larger stores
Sears — Most larger stores

Alabama
The Computer Shoppe
Huntsville

Arkansas
The Computer Shoppe
Little Rock

California
Access to Software
San Francisco
Alamo Computer Center
Cupertino
Alamo Electronic Components
San Jose
Boot's Camera Electronics
Fresno
Candy Computer
Elk Grove
Computermart
Diamond Bar
Crown Book & Software
Los Angeles, Santa Monica, Marina Del Rey, Studio City, Santa Ana, Redondo Beach, Hollywood, Glendale, Culver City, South Pasadena, Thousand Oaks, Torrance, Huntington Beach, Downey, Sherman Oaks, Encino, El Toro, Long Beach, Palos Verdes, Northbridge, Pasadena, Westminster, Woodland Hills, Ventura, Lakewood
Egghead Software
Los Angeles, Huntington Beach
Futurvision
Napa
H.T. Electronic, Inc.
Sunnyvale
Home Computing Centers
San Bruno, San Leandro
Learning Tree Computer
Santa Ana
Software First
San Rafael and Santa Rosa
Software Galeria
Orange
Software House
Fresno
Software Solution
Chico
Software Station
Costa Mesa
Software Supermarket
Lawndale, Los Angeles, Sherman Oaks
Software World
Redding

Colorado
Kazoo & Company
Denver

Connecticut
Caldor
West Norwalk, Old Saybrook, Enfield, Milford, W. Hartford, Vernon, Riverside, Norwalk, Brookfield, Trumbull, Mansfield, Norwich, Hamden, Waterbury, Manchester, Stamford, Wallingford, Avon, Rocky Hill, Ridgefield, Torrington, Branford, Bristol, Meddletown, Fairfield, Groton, New Britain, Derby, Southington

Connecticut (cont)
Crazy Eddie
Norwalk
Personal Computer Center
Norwich
Software City
Stamford, Orange
Software Kingdom
E. Hartford, E. Windsor
Video Connection
Bridgeport

District of Columbia
Crown Book & Software
(3 locations)

Florida
Games 'N Gadgets
Clearwater, Jacksonville, Tallahassee, Orange Park
Maxicat
Miami
Program Store
Clearwater, Pinellas Park

Georgia
Electronics Boutique
Atlanta — Lenox Square, Cumberland Mall
Games 'N Gadgets
Atlanta — North Lake Mall, Perimeter Mall

Hawaii
Software Library
Honolulu

Illinois
ABC Diskette
Chicago
Apprat Computers
Arlington Heights
Complete Computing
Lombard
ComputerLand
Niles
Computerworld
Chicago
Crown Book & Software
Orland Park, Niles, Wheaton, Evanston, Oaklawn, Oak Park, Chicago, Skokie, Deerfield, Downers Grove, Highland Park, Naperville, Hoffman Estates, Arlington Heights, Calumet City
Disk-N-Tech
Orland Park
F.D. Software & C.A.D.S.
Roselle
Software and Beyond
Schaumburg
Software City
Arlington Heights
Software Plus West
Hanover Park
Susie Software
Mount Prospect

Indiana
Burkat Computer Center
South Bend
Microcomputer, Inc.
Indianapolis

Kentucky
Software Source
Louisville
The Computer Shoppe
Louisville (2 locations)
Videovisions
Louisville

Maryland
Buried Treasure
Rockville
Caldor
Timonium, Baltimore, Severna Park, Ellicott City

Maryland (cont)
Computer Kids
Rockville
Crown Book & Software
Wheaton, Columbia, Laurel, Kensington, Silver Springs, Bowie, Bethesda, Greenbelt, Gaithersburg, Annapolis, Rockville
Electronics Boutique
Baltimore
Games 'N Gadgets
Columbia, Baltimore, (White Marsh Mall, Security Square Mall, Eastern Ave.)
Software 'N Things
College Park

Massachusetts
Atlantic Computers
Waltham
Barnes & Noble Bookstore
Boston
Caldor
Chelmsford, Worcester, Westborough, Swansea, Pembroke, Westfield, Auburn, Malden, Norwell, Brockton, Canton, Brighton, Taunton, Salem, Chicopee, Stoneham, Springfield, Framingham, Northampton, Weymouth, Saugus, Methuen, Burlington
Computer Concepts
Hanover
Electronics Boutique
Holyoke
Software City
West Springfield
The Whiz
Westboro

Michigan
Micro-World
Livonia and Milford

Missouri
Software To Go
St. Louis and Clayton

Nevada
Century 23
Las Vegas

New Hampshire
Caldor
Bedford
Portsmouth Computer Center
Portsmouth

New Jersey
Bamberger's
Menlo Park, Cherry Hill, Paramus, Livingston, Wayne
Caldor
Eatontown, S. Plainfield, West Orange, Toms River, Watchung, Paramus, Morris Plain, Woodbridge, Brick Town, N. Brunswick, W. Paterson
Crazy Eddie
Paramus, E. Brunswick, Union, Totawa, Woodbridge
Electronics Boutique
Voohrhees, Rockaway, Woodbridge
Family Computer Centres
South Orange
Games 'N Gadgets
Livingston, Burlington, Wayne
Wolsten's Inc.
East Orange

New Mexico
Academy Computer
Albuquerque

New York
45th Electro
New York
47th St. Photo, Inc.
New York (3 locations)
Advanced Camera
New York
Annex Outlet
New York
Barnes & Noble Bookstore
New York (2 locations)
Big L Electronics
W. Hempstead, W. Babylon, Syosset, New Hyde Park, Patchogue
Binary Orchard Inc.
Hamburg, West Seneca
Broadway Computers
New York
Byte Shop
Merrick
Caldor
Lake Ronkonk, East Patchogue, Wappingers Falls, Riverhead, Rocky Point, Bridgehampton, Vails Gate, Glens Falls, Kingston, Middletown, Latham, Mahopac, Bedford Hills, Albany, Yorktown Heights, Peekskill, Pelham Manor, Schenectady, Nanuet, White Plains, Yonkers, Newburgh, Port Chester, Poughkeepsie, W. Babylon, Levittown, Coram, Clifton Park
Computer Discount of America
Huntington
Computerware
East Meadow
Computerworld
Bayshore
Crazy Eddie
Nesconset, Mass, New York, Syosset, Elmhurst, Brooklyn, Carle Place, Hartsdale, Bronx, Nanuet
East 33rd Typewriter
New York
Electronic Man
New York
Electronics Boutique
Albany
Focus Electronic
Brooklyn (2 locations)
Four Guys
New York
Games 'N Gadgets
Garden City, Huntington Station, Nanuet
Glossy Photo
New York
Great American Software
Flushing
Intercontinental
Flushing
J&R Computer Outlet
New York
J&S Electronic
New York
Lloyd's
New York
Lloyd Corner
New York
London Luggage
New York
Micro Electronics
Valley Stream
Montgomery Grant
New York
Park Avenue Video
New York
Photo Sound
New York
Programs Plus
Brentwood

New York (cont)
Quartz Electronics
New York
Quo Vadis
Ridgewood
Show & Tell Video
Bayshore
Software City
Brooklyn, Flushing
Staten Island Software
Staten Island
Wall Street Camera
New York
Willoughby's
New York
World Trade
Bayside

North Carolina
Games 'N Gadgets
Raleigh

North Dakota
Software House
Fargo

Ohio
Big Bytes Computers
Poland
Computer Center
Mentor
Computer Corner
Lorain
Computers Plus of Ohio
Mansfield
Disk Drive
Toledo
Dunn Computer Center
Lynhurst
Electronic Connexion
Kettering
Games 'N Gadgets
N. Randall
Local Computer Store
Chesterland
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Fairfield
North Coast Programming
Willoughby and Solon
Software and More
Cincinnati
Swallens
Cincinnati
Video H.Q.
Cleveland

Oklahoma
Computer Software Center
Oklahoma City

Oregon
Link Three, Inc.
Beaverton
Software Galeria
Beaverton

Pennsylvania
Bamberger's
Whitehall, King of Prussia
Computer Renaissance
Monroeville
De Re Computers
Harrisburg
Electronics Boutique
Langhorne, King of Prussia, Whitehall, Exton
Games 'N Gadgets
Lancaster, West Mifflin, King of Prussia, Media, Philadelphia

Rhode Island
Caldor
Woonsocket, Warwick, Lincoln
Future Images
Woonsocket

South Carolina
Horizon Commodore Super Store
Greenville (2 locations)

Tennessee
Games 'N Gadgets
Memphis
Software Store
Memphis
The Computer Shoppe
Nashville, Knoxville, Memphis, Chattanooga, Madison

Texas
Babbages
Dallas, Houston, Plano, Mesquite, Fort Worth, Irving, Hurst
Compurite
Houston (2 locations)
Computer Experience
San Antonio
The Computer Store
San Angelo
Data Pro Computer Center
Wichita Falls
Edu-Tron
Fort Worth
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Houston
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Austin
Software Store
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All locations

Utah
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Salt Lake City

Virginia
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MINDSCAPE

A new set of crayons for children of the computer age.

ColorMe nurtures creativity with child's play.

A child's imagination needs little more than tools and encouragement to flourish. That's why Mindscape created ColorMe: The Computer Coloring Kit.

Every child can shine with ColorMe. Kids from the age of four and up can compose pictures without previous artistic or computer experience. The program disk can be used alone or with one or more optional picture disks for hours of freehand drawing and thousands of cut and paste options using predrawn pictures.

ColorMe gives every artist room to grow.

With ColorMe, kids can draw, color, and print their own creations. Text can be integrated to create original stories. The room for creativity is limitless.

ColorMe Picture Disks make this coloring kit extra special. Choose from Rainbow Brite,™ Shirt Tales,™ Hugga Bunch,™ and TINK! TONK!™ These popular characters are predrawn and ready to "cut and paste" for added color, excitement and fun.

You can even take the ColorMe Supply Box with adhesive-backed paper for stickers, colored papers, buttons, cards, envelopes, and a binder for original coloring books.

ColorMe. The creative computer coloring kit.

Open a new world of excitement for your child. ColorMe does more than crayons ever could. So ask your software dealer for a demonstration. Then take home the fun.

ColorMe is available on: Apple® and Commodore®

Mindscape

Software that challenges the mind.

MINDSCAPE INC

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HOME/MONEY MANAGEMENT

HOW A COMPUTER CAN ORGANIZE YOUR FINANCES
Home-Finance Programs Require Work, But Promise A Big Payback

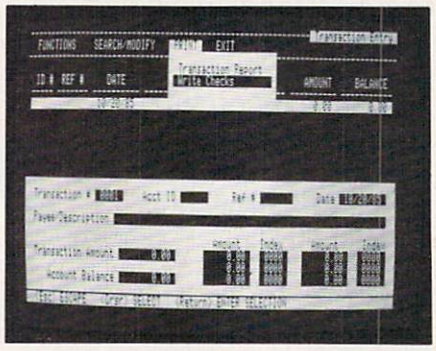
BY NICK SULLIVAN

When I was a teenager I had a summer job as chauffeur/handyman for a rich, retired lawyer. I drove him around and tended his roses. I also did errands for his daughter. If she gave me $2 to get sundries, and I spent $1.97, I had to dutifully return the 3 cents. Other times she'd call the dry cleaner, get a price, and give the exact amount in advance. I found this penny-pinching attitude petty for such a wealthy family, and said so to my parents. Their response: "How do you think they got so rich?"

If you watch your money carefully, you do so at all levels of your budget. Pinch 3 pennies one day and you might save $3 the next day, and $300 the next. Over the course of months and years, you're going to come out ahead of the laissez-faire money managers.

Such control over the small and large details of your household budget is the promise of home-finance software. And, if you work at your financial recordkeeping, that promise will be kept.

Using home-finance software properly *does* require work. But you can consider it work you're being paid for. Chances are you'll end up saving money or investing money more wisely; at the very least, you'll probably do your taxes more efficiently.



(Top) ***Andrew Tobias' Managing Your Money*****: Your financial picture is clear.**
(Bottom) ***Sylvia Porter's Your Personal Money Manager*****: Write a check on your computer.**

THE BENEFITS OF FINANCE SOFTWARE

Checkbook/budget programs squirrel away your transactions into neatly defined cubbyholes. Like data-base programs, home-finance programs allow you to retrieve and sort transactions in different ways. Like spreadsheet programs, they allow you to calculate and recalculate according to different formulas. Unlike either data-base *or* spreadsheet programs, however, home-finance programs are set up and nearly ready to go. You just have to customize them for your own use.

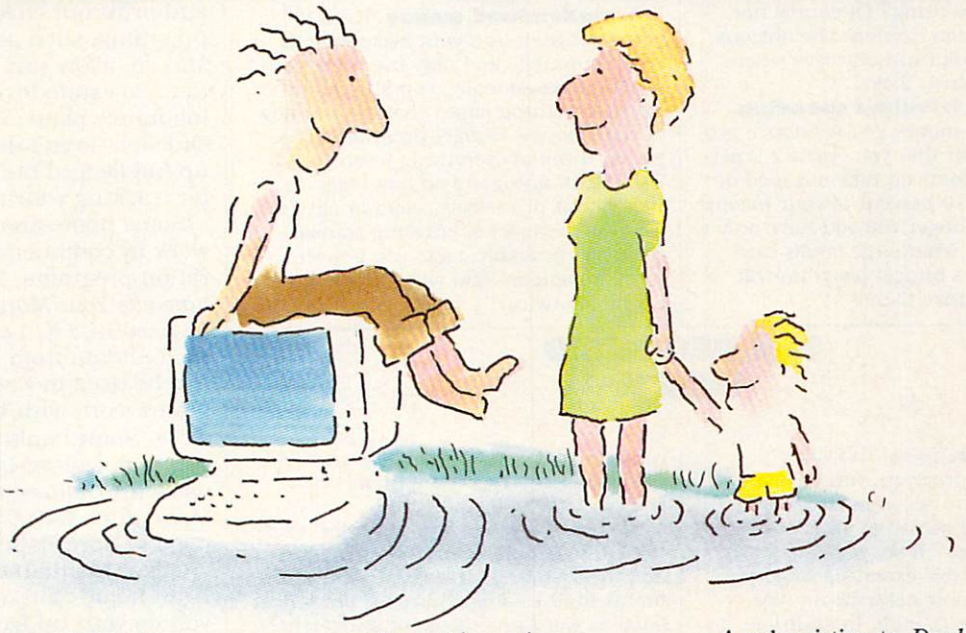
Checkbook/budget programs also perform several tasks you probably couldn't do with a pen, checkbook, or ledger sheet. They automatically perform "double-entry bookkeeping." When you print out a $75 check for your dentist, for example, the transaction also is accounted for in your medical expense category, tax records, monthly budget, etc.

Finance programs will automatically execute regular transactions with one keystroke. Instead of writing out checks for home or car payments, let the computer do the dirty work. →

CHECKBOOK/BUDGET PROGRAMS

Program/Price	Manufacturer	Hardware	Comments
Andrew Tobias' Managing Your Money $199	MECA (203) 222-1000	128K Apple IIe/IIc; 128K IBM PC; 256K PC*jr*; PC*jr* cartridge version from IBM	A complete program that is powerful and easy to use; includes tax, insurance, real estate, and stock sections. The best program of its kind.
Basic Accounting $59	Firefighter Software (800) 641-0814	48K Apple II	Hard to set up, but has full-service accounting.
Dollars and Sense $99–$180	Monogram (213) 215-0529	48K Apple II; 128K IBM PC/PC*jr*; Macintosh	Not easy to use, but powerful. Allows portfolio management and works with *Forecast* (tax-planning) and home-banking services.
Dow Jones Home Budget $139	Dow Jones & Co., Inc. (609) 452-2000	128K IBM PC	Full-service accounting program; however, doesn't process recurring transactions automatically.
Home Accountant $75–$150	Haba/Arrays (818) 994-1899	48K Apple II; 48K Atari XE/XL; C 64/128; 128K IBM PC/PC*jr*; Macintosh; *Expanded* version for 128K Apple IIe/IIc; *Plus* version for 128K IBM PC/PC*jr*	Complete budget program, but setup is tedious; some financial counseling.
J.K. Lasser's Your Money Manager $80	Simon & Schuster (212) 245-6400	128K Apple IIe/IIc; 128K IBM PC/PC*jr*	Designed to work with *J.K. Lasser's Your Income Tax* program.
Quicken $79–$99	Intuit, Inc. (415) 322-0574	128K Apple IIe/IIc; 192K IBM PC; 256K PC*jr*	Primarily a checking program that is set up like a checkbook and is easy to use. Better for tracking spending than setting budgets.
Sylvia Porter's Your Personal Financial Planner $60–$130	Timeworks (312) 948-9200	128K Apple IIe/IIc; C 64/128; 128K IBM PC/PC*jr*	A complete program with clear documentation. However, annoying beeps hinder program. Financial planning section is good.
Time Is Money $100–$125	Turning Point Software (617) 923-4441	48K Apple II; 128K IBM PC/PC*jr*	Powerful budget program that is very easy to set up and use.

GET YOUR FEET WET...



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-Brad Baldwin, *InfoWorld* Magazine

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CIRCLE READER SERVICE 13

THE PROMISED PAYBACK

1. A big-picture plan. If you faithfully enter all income and expenses, you can view your financial "big picture." This will allow you to develop a better plan for your future spending and saving. By developing a monthly budget, you might find that you have $50 extra each month that is wasting away in a low-interest checking account. You might then decide to make regular $50 payments to your high-interest account or tax-free mutual fund.

Do you need a computer to tell you such an obvious thing? Of course not. But since we often overlook the obvious, the computer will train our eyes where we don't necessarily look.

2. Pinpoint frivolous spending. Where does the money go? A finance program will tell you that you spent 2.2 percent of your income on take-out food or that you spent 10 percent of your income on clothes. No longer will you have only a vague notion of what large credit card bills represent; a budget program will force you to itemize them.

3. Complete tax records. If you've properly indexed your transaction categories, at year's end you'll be able to get complete printouts of tax-deductible expenses. For instance, you could have categories for MORTGAGE INTEREST, MEDICAL (with various subcategories), CAR-LOAN INTEREST, MOVING, etc. Instead of running around looking for crucial receipts and stubs and then adding them up, let your computer do the calculations. You might even find more tax-deductible expenses than in previous years.

4. Understand money. Even if you *don't* maintain your records with your computer, and only use a budget program occasionally, you still might learn something about the ebb and flow of your money. Budget programs force you to think of everything (even your Babe Ruth autographed baseballs) as either INCOME or EXPENSE, ASSET or LIABILITY. And the mere act of entering transactions will probably make you a more careful spender—you will think about every penny twice!

THE REQUIRED WORK

1. Set goals. To get full value from a finance program, you must know what you want to accomplish. Do you want a year-end record of all tax-deductible expenditures? If so, you must mark each tax-deductible expense category, and where possible describe its type (1040, Schedule C, etc.). In addition, it helps to know enough about your tax situation to know how much is deductible.

Do you want to see where you're slipping off-budget? You must figure out a category for everything you spend money on and assign realistic budgets. If you're spending big money buying chocolates, but don't want to recognize that habit by entering it in the computer, your budget won't be complete—or true.

2. Record all transactions. You must be vigilant about recording all income and expenses on your computer. Whatever your goal, you won't achieve it unless all financial information is included. In practice, this means entering all your transactions on the computer and then printing out checks. If you get in the habit of paying your monthly phone, utilities, and rent/mortgage bills from your computer, fine.

But what happens when you write a check for $102.95 at the dry cleaners? That won't be recorded in the computer because you didn't use it to write your check. What happens when you get $200 from the bank's cash machine? Record the transaction the next time you sit down. (You should have an expense category named CASH.) Will you remember to do so? Get in the habit of throwing odd receipts and slips into a basket near your computer, and recording them when you're ready to pay bills.

3. Time and money. With few exceptions, home-finance programs are big and intimidating, at least at first. They're not as fluid as single-purpose programs, such as word processors or spreadsheets, because they do more. Count on spending a leisurely weekend to learn and customize the program. In your haste to get started, *don't* rush through the setup procedure.

In addition, since it's unlikely you'll enter data unless you pay your checks by computer, you'll need a printer and special checks on continuous-form computer paper. These cost about $40 for 500 checks and are customized with your name and address. (Ordering information is included in every program.) If you wish, you can also order open-window envelopes for mailing.

Note: Make sure your checks match your transaction. If you're paying out from your Bank One account, you don't want Bank Two checks in the printer!

4. Back up your data. You must constantly make backups of your data disks. Imagine losing 11 months of itemized income and expense reports. Since finance programs are forever asking you to make backups or to format blank data disks, you'd think such utilities would be included in the programs. By and large, they're not. So spend a few minutes to back up existing data disks, and have a handful of blank formatted floppy disks ready when starting new tasks.

START IN JANUARY

Since most individuals operate by the calendar year, at least for IRS purposes, January is the best time to get started with a finance program. If you continue through the year to record your income and expenses by computer, not only will you have a good idea of what went where, but you'll also have complete accounting records. It's OK to start later in the year as long as you can go back and fill in the blanks.

What kind of program do you need? Find one that allows you to do two main activities—set up budgets and print out checks. Some finance programs, such as *Managing Your Money*, allow you to analyze potential real-estate investments and life insurance plans; others, such as *Quicken*, aren't designed for setting up full-fledged budgets but are great for tracking your spending.

Some home-finance programs work in conjunction with tax-preparation programs. Data from *J.K. Lasser's Your Money Manager* can be used in *J.K. Lasser's Tax Preparer*, and data from *Dollars and Sense* can be used in *Forecast*. Other programs work with home-banking services. Some banking services allow you to download banking data for use with *Dollars and Sense* (using *Moneylink*, $49.95) as well as with popular spreadsheets.

Chase Manhattan Bank's Spectrum home-banking service lets you do your budgeting online. You can even enter items you buy with cash or with checks from another bank. If you own a tax program or subscribe to a home-banking service, check to see if there's an associated home-finance program.

A TYPICAL CHECKBOOK/BUDGET PROGRAM

All checkbook/budget programs operate by the same general principles. Here's how a typical program works:

1. Set up accounts. After you specify information about your computer (number of disk drives, printer, etc.), you're asked to list your accounts: checking, credit cards, IRAs, money market, etc. You also provide information such as current balance. Each time money comes in or goes out it will affect one or more of these accounts.

2. Set up budget categories. Most programs come with budget categories already in place, such as TELEPHONE or DENTIST. You can also add and subtract categories. Next,

SYLVIA PORTER'S PERSONAL FINANCIAL PLANNER DOES MORE THAN MANAGE YOUR MONEY

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Volume 1

Your Personal Financial Planner:

Helps you track your day-to-day financial data, then combines this information with your future financial objectives to produce the most comprehensive and easily-understood financial planning program available.

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- Writes your checks and balances your checkbook. (We even built in a calculator and memo pad for you.)
- Prepares and monitors your budget.
- Classifies and tracks your taxable income and expenses.
- Calculates your net worth and generates customized personal financial statements.
- Tracks your financial assets – and your insurance policies.
- Graphically generates supplemental data, such as percentages, ratios and charts.
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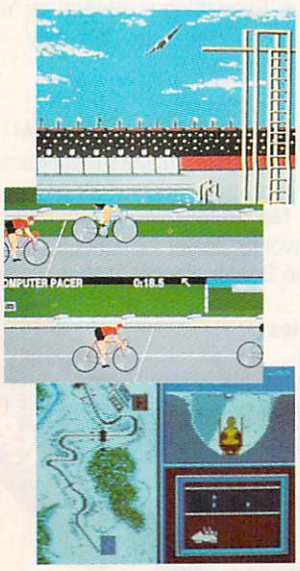
CIRCLE READER SERVICE 54

22 FAST-PACED, EXCITING EVENTS. GO FOR THE GOLD!



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Are checkbook/budget programs worth your time and money? If you're hopelessly disorganized, probably not. Such programs don't promise to reform you. If you're responsible but careless, finance programs might be the goad you need. If you're organized already, a finance program probably won't help, but you'll enjoy putting it through its paces. When they're working well, finance programs are fun to use. FC

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GAMES

OUR CRITIC PRESENTS THE 20 GREATEST GAMES OF 1985

BY JAMES DELSON

The past 12 months have been a time of growth for computer gaming. Even with fewer companies, more quality games arrived this year than ever. As arcade programs declined in number, the strategy/arcade field took off, leaping to the forefront of gaming.

Big news in 1985 included new forms of role-playing adventures, the introduction of animation in text/graphic adventures, and an increase in the scope and numbers of strategy and tactics games.

Computer gaming is an exciting and developing field that surprises me every month. After playing close to 200 new games in 1985, I carefully chose this selection as the best of the year.

Note: For the first time, there's been a tie for Game of the Year. Unless stated otherwise, all games are for ages 12 and up. Minimum memory requirements are 48K for Apple II series, 48K for Atari Home Computer, 128K for IBM PC/PC*jr*, and 128K for Macintosh.

GAME OF THE YEAR No. 1

Galactic Adventures
Strategic Simulations;
(415) 964-1353

The most involving and enjoyable role-playing adventure to date, it surpasses even the *Wizardry* and *Ultima* series. A solo player or team guides one to 10 developing characters through a galaxy of hair-raising adventures and combat, matching wits and weapons against the personalities found in the course of play. Design your own modest encounters or full-fledged adventures with the game's construction set. *Galactic Adventures* is complex, takes months to play, and offers the best times gamers can have on a computer. (For Apple II, Atari; $60.)

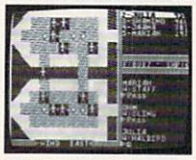
JAMES DELSON, FAMILY COMPUTING's *games critic, has been playing games since shortly after he was born—and computer games since shortly after micros were born.*

GAME OF THE YEAR No. 2

Colonial Conquest
Strategic Simulations;
(415) 964-1353

This one- to six-player political/economic/military simulation has the Great Powers, circa 1880, struggling to control the world. Easy to learn but hard to master, the game system offers novices and experts alike a serious challenge from the most sophisticated set of artificial opponents we've encountered. I'll be comparing new games with this one for some time to come. (For Atari, C 64; $40.)

CONTINUING SERIES



Ultima IV
Origin Systems, distributed by Electronic Arts;
(415) 571-7171

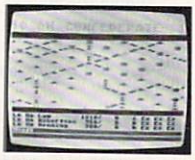
A hybrid of traditional role-playing and text/graphic adventures comprises this long-awaited sequel. It combines character growth and combat with the required interactive conversations of an intellectual program. Improved graphics, a novel approach to spell-casting, and all the usual tomfoolery expected from Lord British make this a welcome treat. (For Apple II; $40.)

ROLE-PLAYING ADVENTURE

Phantasie
Strategic Simulations;
(415) 964-1353

Quest into unknown territory, discovering sections of a huge, scrolling map as you travel. One to six players age 10 or older fight monsters, develop characters for dangerous sojourns into dungeons, teleport from town to town, and learn spells. Combines the best elements of previous role-playing adventures with the most fully fleshed-out characters yet. (For Apple II; C 64/128; $40.)

STRATEGY AND TACTICS



The Battle of Chickamauga
Game Designer's Workshop;
(309) 452-3632

Here's a one- to two-player simulation of the American Civil War battle. The program allows you to determine both how many of your forces the computer can "see" and the computer's "thinking" time in solo games. The game also tracks each unit's fatigue, morale, hidden movement, and command-control status. This is a breakthrough in the genre at a time when its development and popularity are accelerating. (For Atari; $35.)

TACTICAL SIMULATION

Field of Fire
Strategic Simulations;
(415) 964-1353

Tactical simulation is a new game category beginning to appear. Unlike strategic simulations (such as *Chickamauga*, listed above), which cover entire battles and all the participating units, these games are small-unit encounters where the object may be to take a house, not a town; a bridge, not a province.

In *Field of Fire*, a single player or team takes a World War II company of U.S. troops from North Africa to the Battle of the Bulge in eight varied scenarios or a full campaign. The program offers features common to both war games and role-playing adventures. (For Atari, C 64; $40.)

POLITICAL

Incunabula
Avalon Hill;
(301) 254-5300

Set on a mythic pre-Christian continent, here's a complex game of statecraft mixed with economic, financial, and historical conflicts. One to seven human or computer players combine foreign trade, alliance-forg-

(No I.D. required for half-elves.)

When the Going Gets Tough, the Bard Goes Drinking.

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GAMES

ing, and military operations, all within the game's nomadic lifestyle. The result is a fascinating, ancient version of *Diplomacy* with Monopoly overtones. (For IBM PC/PC*jr*; $30.)

MULTIPLAYER

Paris In Danger
Avalon Hill;
(301) 254-5300

Paris in Danger, the best multiplayer game of 1985, is one of those rare games designed from the start for two or more players. That saves the computer's power for details of group gaming. Reenact Napoleon's 1814 campaign to save France from the invading Prussian-Austrian-Russian alliance. Players switch from strategic movement on a master map of France to tactical combat on hundreds of smaller maps enlarged from the master. The play system is superb. Suitable for use by up to a dozen gamers. (For Atari; $35.)

STRATEGY/ARCADE

Kennedy Approach . . .
MicroProse Software;
(301) 667-1151

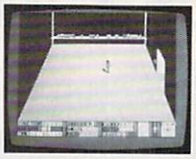
If you think flying one plane is tough, try taking charge of an airport control tower. This edge-of-the-seat air traffic controller simulation is one of the most intense games around. In a nonstop battle of wits and hand/eye skills, solitaire players or teams control a sky full of airplanes that can talk with you. Operating on several skill levels at six U.S. airports, you must maintain a constant balance in routing flights, directing planes to land and take off, and keeping the aircraft from colliding with, or even approaching each other. (For Atari, C 64; $35.)

ARCADE/ROLE-PLAYING ADVENTURE

Competition Karate
Motivated Software;
(415) 383-9005

The first program to combine the character-creation and long-range development elements of games such as *Wizardry* with the streamlined play systems of strategy/arcade programs like *Archon*. The fast-moving system allows you to create characters and match them against human- or computer-controlled opponents. The attribute points of characters increase after combat. (For Apple II; $35.)

ARCADE/SHOOT-'EM-UP



Countdown To Shutdown
Activision;
(415) 960-0410

Solo players or teams control eight robots—each having different specialties—to avoid a meltdown in a huge nuclear plant. You have the robots work as a team, using their individual strengths while protecting their weaknesses. Scout out a vast, multileveled labyrinth, map a route through it, and eliminate your opponents. Finally, shut off the reactor at the labyrinth's core. With slick graphics, this game is fast moving, amusing, and compelling. For age 10 and older. (For Apple II, C 64; $30–$40.)

ARCADE

Karateka
Broderbund;
(415) 479-1170

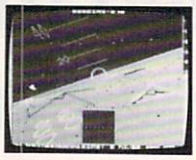
A martial arts hero tries to rescue a princess. Entering the domain of a mysterious bad guy, he has one-on-one karate encounters with computer opponents, each tougher than the last. It's for age 10 and older and is beautifully animated. (For Apple II, Atari, C 64; $30–$35.)

HYBRID

The Ancient Art of War
Broderbund;
(415) 479-1170

This intelligent and challenging hybrid program combines war-game strategy, arcade skills, and a construction-set structure with great animated graphics. You fight computer opponents such as Caesar, Genghis Khan, and Alexander the Great. Solo or team players can use the games provided or create their own scenarios. *The Ancient Art of War* includes animated characters who move like real people (a first for this genre). A good introductory game with appeal for experts. (For IBM PC/PC*jr*, Macintosh; $45.)

SIMULATOR



Jet
subLOGIC;
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Here's a superb jet fighter program that allows you to take off, land, participate in dogfights and aerobatics, go on high-risk bombing runs, and fly precision maneuvers. You can use long-range radar, computer-controlled target tracking, 360-degree vision while flying, variable magnification to see distant targets, and an ejection seat for quick escapes. It's all in real-time with 3-D graphics. (For IBM PC/PC*jr*; $50.)

TEXT/GRAPHIC ADVENTURE

Wilderness
Electric Transit, distributed by Electronic Arts;
(415) 571-7171

You are an aircrash victim lost in the wilderness. To survive, you must hike out of your predicament, living off your provisions and the land. This stunning, thrilling, and innovative program includes excellent documentation with lots of information on hiking and other outdoor skills. (For Apple II; $49.)

TEXT-ONLY ADVENTURE

The Hitchhiker's Guide to the Galaxy
Infocom;
(617) 492-1031

As the Earth's only survivor, your travels are difficult but rewarding. You wander the galaxy in search of truth and some explanation of the meaning of existence (or whatever passes for it amidst the stars). Often frustrating to the point of distraction, this is the funniest game of the year; for age 14 and up. (For Apple II, Atari, C 64, IBM PC/PC*jr*, Macintosh, Tandy Model III; $35–$40.)

CONSTRUCTION SET

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Electronic Arts;
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Monsters is the first construction set in which you create characters

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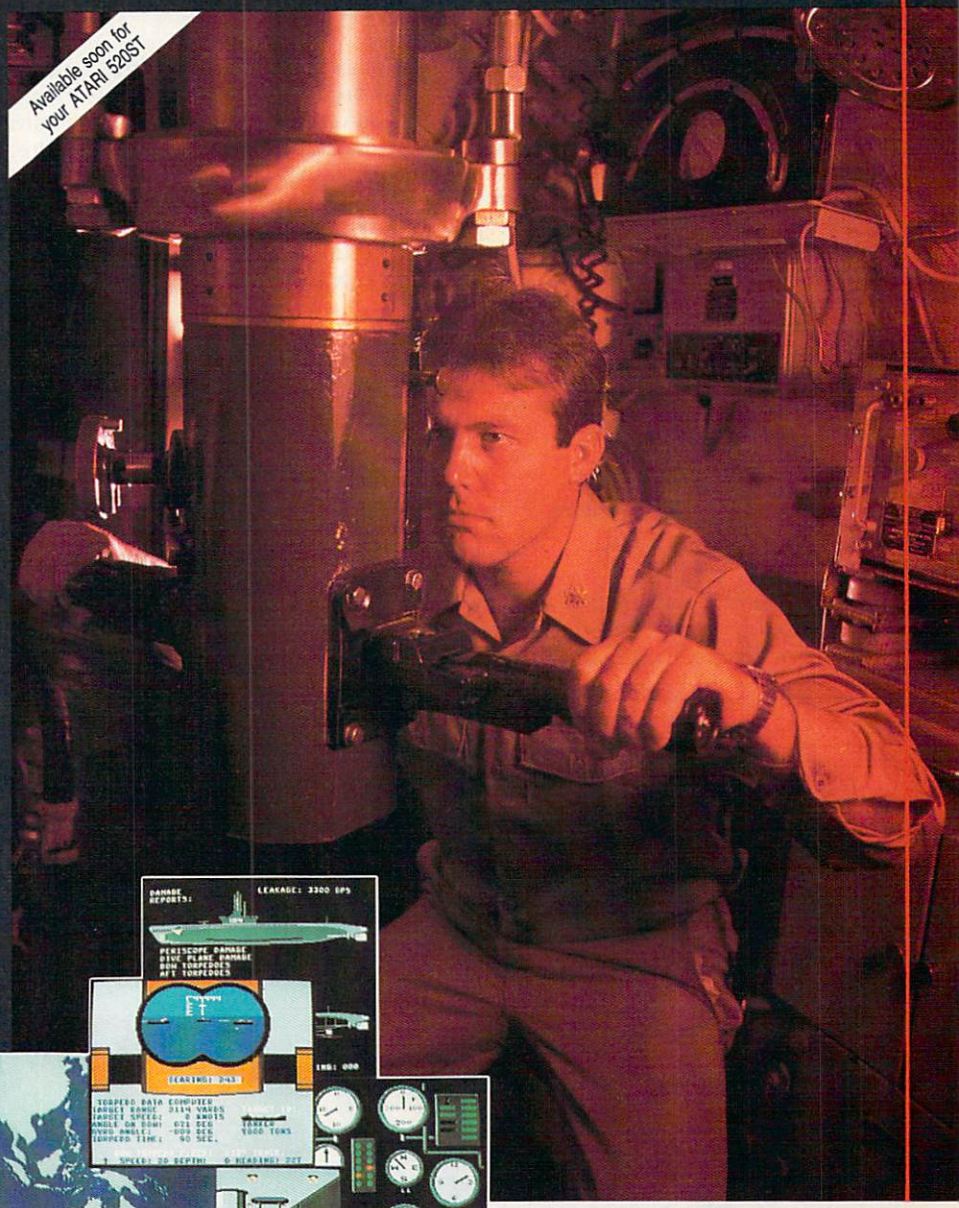

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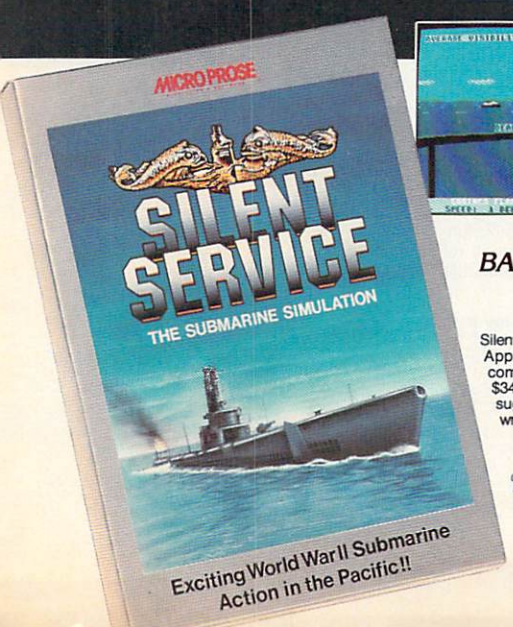

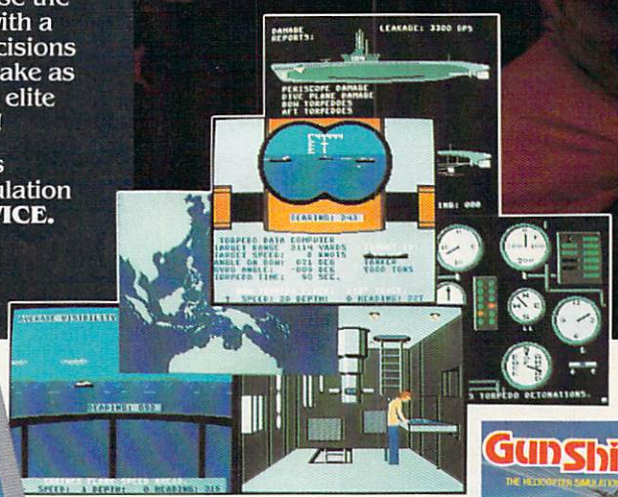

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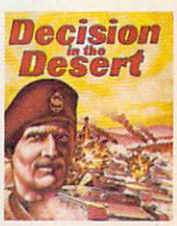

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CIRCLE READER SERVICE 32

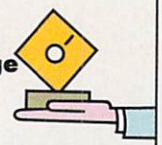
GAMES

that grow and develop. This exciting, build-it-yourself program also doubles as an impressive strategy/arcade game. Pick creatures (such as a human being, bear, amoeba, or Tyrannosaurus rex), then equip them with a wide variety of weapons and devices to improve their fighting and survival skills. Send your monsters into combat or competition against human or computer opponents. You can play this game a hundred times, and it'll never be the same twice. For age 10 and up. (For C 64; $32.)

FINANCIAL
BottomLine Capitalist
Venture Software;
(818) 986-4110

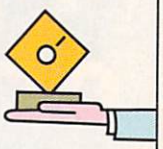
BottomLine Capitalist is a sophisticated program for up to four players or teams. Take a small electronics firm and turn it into a national corporation. Control unit prices, manufacturing costs, advertising, marketing strategies, and more. A thrilling experience aided by useful charts and tables. The documentation is the only hitch, since it's hard to follow without financial gaming experience. (For IBM PC/XT; $80.)

FOR YOUNGSTERS
B.C. II: Grog's Revenge
Sierra On-Line;
(209) 683-6858



This sprightly game features the daring exploits of ace Stone Age inventor Thor. Rolling along atop his wheel, Thor steers through mountain trails and stalactite-dotted caverns, picking up clams while avoiding natural dangers and Grog the dinosaur. The animated scrolling graphics are superb, and the play system is easy to master for kids older than 6. (For C 64; $35.)

SPORTS
On-Field Football
Gamestar;
(805) 963-3487



Employing joysticks and the keyboard, one to two players control fully animated four-man teams. This is the most complex sports simulation to date; yet once you learn it, it's the easiest to play. Choose from a variety of plays. You can pass, hand off, fake a kick, punt, lateral in the backfield, or run the ball yourself. You can also intercept and run back the other team's passes, kick off, return a kickoff, recover fumbles, and more. Enjoyable for age 10 and up. (For C 64; $31.) FC

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CIRCLE READER SERVICE 17

COMPUTING CLINIC

ATARI 130XE RAM DISK • APPLE IIc EXPANSION • PRINTING FROM BASIC

When I use the LLIST function with my Radio Shack Color Computer 2, my CGP-115 Color Graphics Printer prints the lines on top of each other. How I can prevent this?

KENNETH SUMMEY
Cartersville, Georgia

This is a common problem. The BASICs on some computers give line feeds to printers (advance the print head to the next line); others do not. Atari, Commodore, and Radio Shack BASICs don't. The CoCo LLIST function sends a carriage return (returns the print head to the *beginning* of the line), but not a line-feed instruction. Consequently, the DIP switches on your printer should be set to provide an automatic line feed after each carriage return. This will stop the overprinting of lines. —J.B.

Does Apple have any plans to make a peripheral for the IIc that will allow the use of plug-in circuit boards, such as those used on the IIe?

B.D. WOOD
Surfside, South Carolina

Not so far as we know; but such a device is often not necessary. The IIc's printer, modem, and joystick/mouse ports all offer expansion possibilities. Other products, such as system clocks and speech and music synthesizers (which often come in the form of circuit boards for the IIe), are available as external devices for the IIc.

In addition, some third-party manufacturers have introduced products that you can install *inside* your IIc to give it more power. And no soldering is needed; the companies say all you need is a screwdriver.

The MultiRam CX Card from Checkmate Technology, Inc. (509 South Rockford Drive, Tempe, AZ 85281; [602] 966-5802) expands the IIc's 128K RAM to either 384K ($229) or 640K ($429)! And you can install the company's optional 65C816 kit (which will give the IIc a 16-bit processor) right on the card.

If you're more interested in running software such as *WordStar* or *dBase* on your IIc, consider Z-RAM from Applied Engineering (P.O. Box 798, Carrollton, TX 75006; [214] 241-6060). Both the 256K ($359) and the 512K ($419) models include the Z-80 processor necessary to run CP/M programs. Applied Engineering's Z-80c card ($159) adds CP/M capability but no extra memory.

Both companies' memory-expansion products will work with the best-selling *AppleWorks* program, expanding its desktop dramatically (to 413K with Z-RAM!). Also, since *AppleWorks* is loaded entirely into memory at one time, thus bypassing the need for disk access, it runs much faster with these. Dan Pote, president of Applied Engineering, expects his company and others to come up with many more hardware and software enhancements for the Apple IIc and Macintosh (also a "closed" system). —L.W.

How do I use the full 128K in my Atari 130XE? And can DOS 3.0 turn the extra 64K into a RAM disk?

M. MCINTYRE
Harriman, Tennessee

If you wish to use the extra 64K in your BASIC or machine-language programs, you should consult the 130XE owner's manual. It gives information on accessing the extra memory (in banks of 16K). You can use this memory space to store data (such as sprites, pictures, etc.) that can be called into a program when it runs.

According to John Skruch, manager of XE software, your DOS 3.0 will not turn the extra 64K into a RAM disk. (A RAM disk is part of the computer's memory that acts like a super disk drive—you can load files into RAM and access them faster than from the disk drive.) However, DOS 2.5, which now comes with the 1050 disk drive (in place of DOS 3.0), automatically turns the extra 64K into a RAM disk. You'll be able to use it with unprotected programs, such as *Atari Writer*. To obtain DOS 2.5, send your DOS 3.0 disk to Atari Corp. (1196 Borregas Ave., Sunnyvale, CA 94088, Attn: Customer Relations, DOS 2.5). —L.W.

Questions are answered by JEFFREY BAIRSTOW, *a regular Clinic contributor, and* LOUIS WALLACE, *who has written several product reviews and Buyer's Guides.*

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CIRCLE READER SERVICE 11

Setting Up Your Software Library

BY DAVID HALLERMAN

OUR CRITICS OFFER YOU THEIR SUGGESTIONS FOR BUILDING COMPUTER SATISFACTION

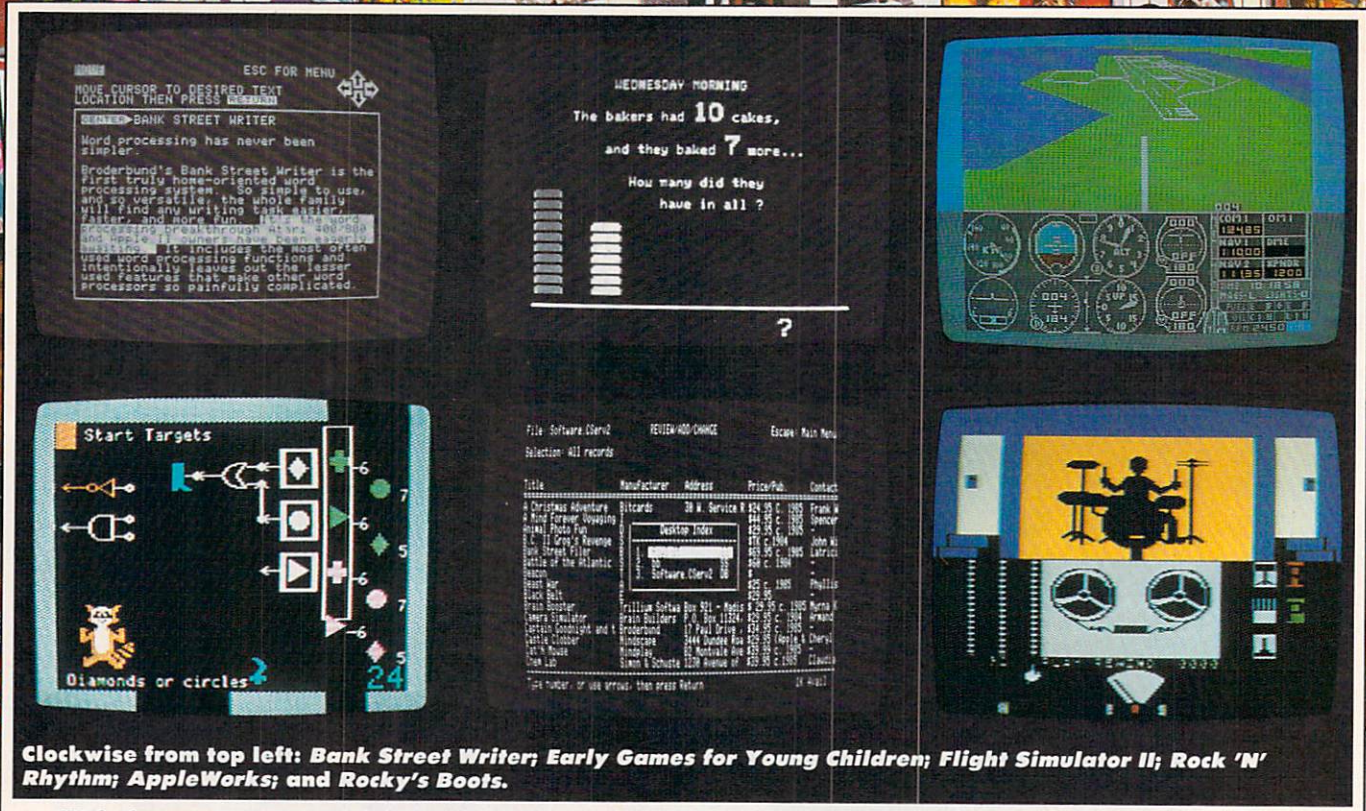
PHOTOGRAPH BY ANTHONY LEOW

Would you rather be singing "Getting to Know You" or "(I Can't Get No) Satisfaction" while using your new computer? Organizing your personal software library could make the difference. In order to make the machine do what you want (for computers do nothing without software), you need smart tools to control it. So naturally you ask, "What should I buy? Which are the 'must have' software packages?"

When asked which titles they'd choose for setting up a family software library, FAMILY COMPUTING's panel of experienced reviewers spoke with almost one voice: "It depends."

Before talking about specific titles, most of the panelists pointed out that researching your needs comes first. Concentrate on learning your computer's capabilities and on finding out what's available, they said. Your best bet is reading books and magazines.

Only then, the group felt, could their software suggestions be useful. "Every time I recommend [a software package], I must be aware of biases" and "what ought to be on your shelf may not be what's on mine " were commonly expressed.



Clockwise from top left: *Bank Street Writer; Early Games for Young Children; Flight Simulator II; Rock 'N' Rhythm; AppleWorks;* and *Rocky's Boots.*

With those caveats in mind, let's look at the results of FAMILY COMPUTING's informal software library survey.

CATEGORIES FOR YOUR COLLECTION

Of all the different types of software on the market, one category in particular won approval across the board. In fact, it was everyone's first choice. We're talking about word processors. These programs have essentially replaced typewriters as the writing tools of choice. Even if you write only once in a while, the ability to correct mistakes on-screen before printing makes them invaluable. And if writing is a regular part of your life, then switching to a word processor will be, as one reviewer phrased it, "the next best thing to paradise!"

While not as universally needed as word processing, number-crunchers and data managers will make a major difference for people who handle substantial amounts of information. Spreadsheets and personal finance packages offer two methods for manipulating your bills and budgets. As general number-tracking tools, spreadsheets work equally well at managing home accounting or the statistics of your favorite baseball team. Personal finance software is, as the name indicates, dedicated to that specific purpose. If your information consists of words as well as numbers—a name and address file is a classic example—data-base (or filing) programs help you arrange and call up data as needed. These much-touted productivity tools can help organize your life. But you'll probably need to update your information regularly. Ask yourself if your work style is conducive to that requirement. Remember that fitting a computer into your life often works best when it's used as an extension of interests you're already involved in. Don't try to twist yourself out of shape to adjust to the machine; it's your servant.

A good introduction to computers will ease the transition. Nothing saves you more time than familiarity with the keyboard, so if you're not comfortable at the keys, try a program that teaches typing. Or for a stimulating taste of your machine's possibilities, pick up the latest volume of a magazine-like disk containing a variety of programs. Certain games can help you get acquainted, too, by demonstrating the computer's intricate, interactive nature.

The computer's capabilities in graphics and sound often yield eager visions of expanded artistic productivity. Many families surveyed found that software (and in this case, hardware add-ons) can enhance your visions. Such tools foster creativity in drawing, music, and animation by letting your ideas flow smoothly and by encouraging experimentation. They're a lot of fun, too. But if drawing a stick figure is hard now, or if you don't know a "C" note from a notepad, the software won't make you into a talent. Graphics programs for creating pages filled with pictures and fancy typefaces are also fun. They're often productive and easier for the artistically handicapped.

Do you need to program? Well, no, not nowadays. Not most folks. You can live a long, productive life on a diet of canned software alone. But even though programming is no longer as essential as it once was, it's still popular in many households. In fact, parents and children can meet as true equals when playing with computer languages. Also, you'll be more self-sufficient after you learn how to grow your own programs. "Little" ones written at home can customize the computer to your way of working. Even a passing familiarity with programming deepens your sense of computer logic. That touch alone will often help you master some subsequent program. Of course, Logo, Pascal, and BASIC maintain their vitality in schools as well. Maybe not as much as some commercials would have you believe, but they're an important factor for many students, nonetheless.

WORD PROCESSORS: YOU CAN'T LIVE WITHOUT ONE

"The first thing to look at . . . one of the best reasons for owning a computer . . . it's vital for letters alone . . . no family can be without one." It's hard to hyperbolize the value of word processors.

Bank Street Writer was recommended most often for beginners, for folks who write only once in a while, and sometimes for the whole family. Available for most major computers (*see the software directory for full availabil-*

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ity information), *Bank Street Writer* won high praise for its simplicity and usefulness.

Novice users should also look at *Magic Slate* ("Expands from 20- to 40- to 80-columns to fit your needs."); *MasterType's Writer* ("My nine-year-old took it as her own."); *Letter-Writer* for the Tandy Models I, III and 4 ("Does form letters and split-screen."); and *Atari Writer* ("The standard for the Atari").

Most modern word processors will help you put your thoughts down more easily than when using a pen or typewriter. So when you need the "extra" that simple packages don't offer, focus your attention on accessory features. These might include complex formatting for newsletters, footnoting for scholarly works, and file compatibility with data-base, spreadsheet, or telecommunications programs. Macros are another desirable function. They ease repetitive writing by allowing you to insert often-used phrases, sentences, or even whole paragraphs by pressing one or two keys.

Like *Bank Street Writer*, *PFS:Write* is available for most computers and is easy for both children and adults. *PFS:Write*, however, offers more features, such as greater control of your printer, and spreadsheet or telecommunications compatibility.

Writing tools recommended for specific machines include the easy-to-use *Creative Writer* on the C 64 and old standbys like *Scripsit*, which has numerous add-ons, including a grammar checker (for Tandy Models I, III and 4). *Telewriter-64* lets users of Tandy Color Computers start writing minutes after it's unwrapped.

When you need a high degree of printer control, check out *Apple Writer II*, *Letter Perfect* for the Atari, or *PaperClip* for the Atari and C 64/128. These programs have more features than the family possibly needs, but it's nice to have the power in reserve. (*For more information see "Word Processors: New Tools for an Age-Old Task" in the November 1985* FAMILY COMPUTING.)

INTEGRATED VS. STAND-ALONE

Some software gives you more than just a word processor. Integrated packages that also contain a data base and a spreadsheet are very popular. They make it relatively easy to transfer information across applications and quickly switch back and forth between them. Those are their strengths. The Achilles' heel of integration is common to most jack-of-all-trades: it is master of none. If you're writing all the time, for instance, use a stand-alone word-processing program. You'll generally get greater power and more features from a program that doesn't need to share precious memory or disk space with other applications.

AppleWorks, the best-selling software package in America, came showered with praise from our panel, too: "The best . . . almost too easy . . . more fun to use than other programs." Here, in one program, is all the productivity power many families will ever need. The data-base module, in particular, is quick and especially easy. Still, you will run into limitations if you want to do any one thing in depth.

Integrated software is voracious in eating up memory. That's why you won't find many versions for older machines like the C 64. *TRIO* is an exception. Organized along the same lines as *AppleWorks* (data-base or spreadsheet files are inserted into the word processor), TRIO does a credible job with a mere 64K.

You can also integrate information from individual packages that work together. Three examples include the *PFS*, *Bank Street*, and *Creative* software series. Each offers separate programs-word processors, filers, spreadsheets, and even some spelling checkers and business graphics-all of which work together. This allows you to expand and spend as your needs and wallet grow. There's a tendency, however, to become locked into a single series, where each package may not be equal in quality.

You don't have to play the game that way. For example, the menu-driven *SynFile+* and *SynCalc* data-base and spreadsheet programs are considered the best of their kind for the Atari. You can transfer files from either into *Atari Writer*—creating an "integrated series" from two companies' products.

KEEPING GOOD ACCOUNT OF YOUR LIFE

When used in the home, a file manager or number-cruncher need not be as powerful as the ones employed in a business. Since knowing how to use data-base programs is becoming a basic required skill in the computerized world, their use in the home can be construed as being educational. *Bank Street Filer*, which shares information with *Bank Street Writer*, is a good intro for kids starting off.

One panelist spoke thus about *PFS:Write*'s companion data-base program: "My 14-year-old is computerphobic, but she finds it easy to set up *PFS:File* to do a wide range of things for her school work." Yet this data base is not just for kids. It's just easy, with full screens that you arrange into the forms you want, then fill in.

Spreadsheets are one way of tracking your taxes, budgeting, and accounting. You can't go wrong with the inexpensive *My Calc* for the IBM PC. (It appeared as a "best buy" in FAMILY COMPUTING's May 1985 cover story "Spreadsheets: New Tools for Decision-Making.") Apple II users will like *PractiCalc* for price, too, in addition to its many math functions. *Multiplan*'s long-term popularity means you'll find file-transfer compatibility with programs such as *AppleWorks*. The Mac version of *Multiplan* can be more fun than other machines' because of the mouse interface. Point-and-click is a natural method for moving around the grid-like cells of a spreadsheet.

You might prefer a spreadsheet's flexible layout for your money management. Some critics felt that packages dedicated to personal finance "generally don't handle home accounting the way people actually work."

But the imposed structure of home budgeting and finance software is attractive to many. (*See Home/Money Management in this issue.*) *Home Accountant* is good if you commit your time to it and is very comprehensive. The best-selling *Managing Your Money* is available in an upgraded version for the IBM PC and contains more than one hundred new features. For simplicity and accuracy, *Time Is Money* is an excellent home accounting choice.

IT DEPENDS HOW OLD YOU ARE

If you live with younger children, look for programs to help them grow accustomed to the computer. Especially good are packages they can use without the aid of an adult. *Mickey's Space Adventures*, starring the famous mouse; *Facemaker*, for kids up to age 7; *Early Games for Young Children*; and *Kids on Keys* were judged winners in this category.

Panelists with kids over the age of 10 extolled the fun and learning to be found in *Rocky's Boots*, a game of Boolean logic (the "on/off" logic used by every computer). "It will go down as a classic," one panelist said. Also for the 10 and older age group, the *Snooper Troops* series is a painless way to introduce computer concepts.

Computers can accomplish a wide variety of activities. That's their wonder and their puzzle. To increase that getting-to-know-you feeling, the reviewers strongly suggested the *Microzine* series. Among the comments: "Each disk contains several programs . . . It's always interesting and always well-done, spans a wide age range

WHAT TO LOOK FOR WHEN SHOPPING FOR SOFTWARE

When they talk about "compatibility," computer folks are basically asking, "Will it work together?" The variety of areas that comprise "it," however, are what keeps shoppers (as well as software designers) on their toes. To build your software library on a firm foundation, all the parts must fit in. Stop before buying any piece of software, and ask yourself these questions:

1. Is this software for your brand of computer? Don't overlook the obvious. If your machine is an older model (e.g., an Apple II plus), will new sofware still run on it? If you have an IBM "clone," does it emulate the original machine closely enough to run all off-the-shelf packages? Remember that compatibility sometimes comes in shades of gray, not solely black or white.

2. Even if it's the right software for the right machine, do you have enough memory? Do you need an 80-column display, or will a 40-column do? Hardware requirements are usually indicated right on the box. What are the configuration requirements? Programs have many demands. One won't work without two disk drives; another needs a mouse, a color monitor, a specific brand of printer interface card, or some other attachment you find you don't have when you get home.

3. Will this program work with your printer? This is especially important with graphics programs. Does this word processor allow access to your printer's capacity for boldface, underlining, italics, etc.? Look in the software manual; it should indicate which printers are compatible. If you don't own a printer yet, but are buying software now, look for flexibility in printer configuration.

4. Can this program work with your existing software? For instance, are the notes created by your word processor going to load into the new telecommunications package you're thinking of purchasing or have just acquired?

5. Speaking of telecommunications software, will it work with your modem? This area of compatibility can be murky, so be particularly sure before buying. (*See the "Buyer's Guide to Modems" on page 46 in this issue.*) If you don't own a modem yet, first find hardware and software with designs that will work together (not necessarily from the same company); then buy.

6. Is there a return policy? Protect yourself when shopping. First, it's your responsibility to know your own hardware setup. Then, after asking the salespeople and checking in the manual for the configuration requirements, find out if the software can be returned if for some reason it's still not compatible.

7. What are the manufacturer's warranty specifications? Is the disk protected for a mere 30 days, a full year, or even a "lifetime"? The ultimate warranty is the absence of copy protection. That allows you to make a backup and always use the copy, storing the original in a safe place. What's the policy on upgrades? If a snazzy new version of your program is released, can you get it free or for a nominal charge? Or will the tariff be stiffer?

One way to supplement your software library lies in the public domain. Join a user's group. Not only can you share questions with others, but there are lots of public-domain programs available for approximately the cost of a disk. Then you can see the types of software available and find out what you actually need.

and covers many topics . . . It's unusually varied; a nice sampling for a family just beginning."

Nontypists wisely buy one of the many typing programs when they pick up their computers. *Typing Tutor III* was mentioned by name for all ages. The choice for children up to 14 was *MasterType*.

THE ARTS AND JUST PLAIN FUN

Print Shop. Print Shop. Print Shop. Now say it a few more times and you'll sound like our reviewers. Here's an instant gratification program for the entire family since it's so easy and gives such tangible results. Mix and match text, pictures, and borders to make greeting cards, signs, and banners. Dozens of pictures come with the main disk, and three volumes of *Graphics Library* "clip art" disks add hundreds more.

For quality print-shop capabilities at an almost-professional level, consider two equivalent, but somewhat different page-layout programs for the Macintosh. *MacPublisher* is better for multiple-page documents, such as newsletters. For single-page layouts, *ReadySetGo* is simpler. However, you can create single- and multiple-page documents with both.

The exciting *Dazzle Draw* allows the highest resolution available on a 128K Apple. With pull-down menus like the Mac, it's fun right out of the box. *Blazing Paddles* (another point-and-choose drawing and painting program) shares the same direct simplicity. Both support many popular printers when you want a hard copy of your art treasures.

As with all art, you need the right tools for the job. While joysticks suffice, they're like using the side of a wrench to drive a nail when you really need a hammer. When it comes to drawing, most users think the mouse is a better "mousetrap."

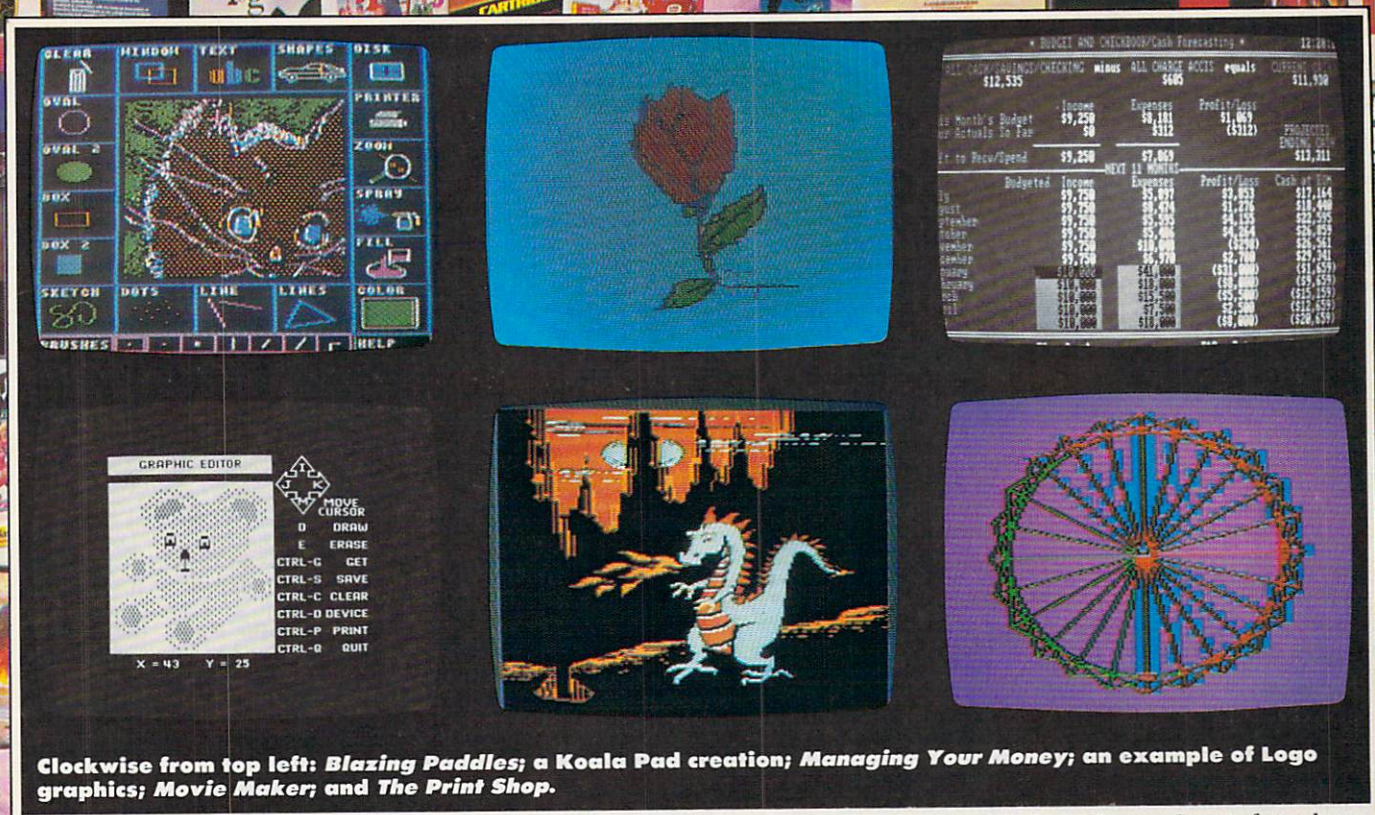
Actually, even though this is an article on software, quite a few panelists suggested you buy hardware in the form of input devices. Mentioned most was the KoalaPad. Draw on the pad as you would on paper, and the images appear on-screen. The Koala Pad doesn't work without software, but it does come with *KoalaPainter*. Many third-party software packages allow you to use the Koala Pad; *Blazing Paddles* is a good example.

Animation takes particular patience, but it can be exceptionally rewarding. *Movie Maker* exploits the computer in a way you couldn't have done before. In that sense, it teaches you more about how computers work than a word processor, which extends your abilities in an area you're already experienced in.

Among the lower-priced computers, the superior sound chips found in the C 64 and the Atari shoot them to the top when it comes to software for making music. *The Music Studio* for the C 64 adds stimulating graphics to music. Younger kids who want quick results probably would like Tom Snyder's *Rock 'N' Rhythm*. *The Music Shop*, *Songwriter* (lauded for its simplicity), and *Music Construction Set* received honorable mentions. Remember that these programs will not sing as sweetly on an Apple II or an IBM PC, due to those machines' limited, one-voice sound capabilities (unless you get an add-on board for music).

Games are included in our panel's basic software library, but it's a rare game that makes it. Find programs for games you already play, like *Sargon III* for chess or *Charles Goren's Learning Bridge Made Easy*. Would-be pilots were advised to buy the famous *Flight Simulator II*, since it "teaches a lot about interacting with the computer, reading the screen, and responding to detail."

Infocom's introductory adventure games, particularly *Hitchhiker's Guide to the Galaxy* and *Planetfall*, fit into the software library, too. "Such games teach logic and



Clockwise from top left: *Blazing Paddles*; a Koala Pad creation; *Managing Your Money*; an example of Logo graphics; *Movie Maker*; and *The Print Shop*.

that computers are literal machines . . . Truly fun and educational . . . They increase your sense of interactivity with the computer," the reviewers said.

PROGRAMMING LANGUAGES

Most languages come on disks purchased separately. Even though *BASIC* is built into some machines or comes on a disk as part of the package, utility programs that assist in creating lines of code become essential. You'll need software for writing software.

With its primary use in the schools and because it creates immediate results on-screen, Logo is the language panelists mentioned first for kids. Find out which version of Logo is used in your child's class. In the home, realize that most children can't program on their own at the beginning, so you'll have to help.

Two hints if you're playing with BASIC on an Apple II: You'll build a firm foundation by working through the *Applesoft Tutorial*, a book/disk combination. Although not part of the original panel, one editor insisted we tell you about the *Global Program Line Editor* (GPLE) from Beagle Bros. He called it "an absolute necessity" because it makes editing your programs as easy as editing with a word processor.

Our FAMILY COMPUTING technical editor, an Atari afficionado, talked of getting a good line-renumbering program, particularly Extended BASIC 1.0. This is public-domain software, so try to find a copy through a local users' group. You can download it from CompuServe if you have a modem.

Turbo Pascal is a "must get" if you want to program on an IBM PC or compatible. This is a popular version of the programming language tested by the Educational Testing Service (the same folks who administer the SATs and GREs). A *Turbo Tutor* disk is available to increase your learning curve.

MACHINE-SPECIFIC SUGGESTIONS

Some software solves machine-specific problems. For example, those tortoise-like disk drives on the C 64 waste time and patience. Disk operating system speed-up cartridges such as *Fast Load* and *Mach-5* relieve the dilemma.

Some software has been written mainly for one machine. On an IBM PC or compatible, there's *SideKick*. Without disturbing your main program (word processor, spreadsheet, etc.) this utility "pops up" at the press of a key. With a Swiss-pocket-knife effect, out comes a phone dialer and directory, a note pad, calendar, datebook, and more. Simple and direct, *SideKick* can make the computer useful right off the bat.

BEFORE YOU GO

After being involved with computers for a while, you'll find lots of software available, with more on the way all the time. There are many packages on the market with myriad promises of time to be saved, subjects to be mastered, or games to be won. Out of this cornucopia comes much good software, some real turkeys, but few "greats." The choices aren't easy. An honest response to "What should I buy?" is rarely absolutely this or definitely that.

In many respects, the guidelines given above are conservative, which is to say, tested by time. Each panelist wanted to be as sure as possible when making recommendations about how to invest your money and time. That your favorite piece of software is not listed here, however, means nothing. The final authority for what you need can only be you.

FAMILY COMPUTING'S PANEL OF REVIEWERS

SHARON ZARDETTO AKER, *Sussex, NJ*
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LARRY KRENGEL, *Marengo, IL*
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GWEN SOLOMON, *Spring Valley, NY*
TAN A. SUMMERS, *Metairie, LA*
KEN WILDMAN, *Ada, OH*
DAVID WILSON, *Newton, MA*
JUDITH ZORNBERG, *Brooklyn, NY*

THE SOFTWARE LIBRARY DIRECTORY

Unless otherwise stated, minimum memory requirements are 48K Apple II series, 48K Atari, 128K IBM PC/PC*jr* or compatibles, and 128K Macintosh.

Applesoft Tutorial: Addison-Wesley Publishing Co., 1 Jacob Way, Reading, MA 01867; (617) 944-3700. Available for Apple II. $30.

AppleWorks: Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014; (408) 996-1010. Available for Apple IIe (128K recommended) and IIc. $250.

Apple Writer II: (see *AppleWorks* for manufacturer, address, and phone). Available for Apple IIe/IIc. $149.

Atari Writer: Atari, Inc., 1312 Crossman Ave., Sunnyvale, CA 94088; (800) 538-8543. Available for Atari. $100.

Bank Street Writer and **Bank Street Filer:** Broderbund Software, 17 Paul Drive, San Rafael, CA 94903; (415) 479-1170. Recommended for 64K Apple II and IBM PC/PC*jr*. $70–$80. Also for Atari and C 64. $50.

Blazing Paddles: Baudville, 1001 Medical Park Drive S.E., Grand Rapids, MI 49406; (616) 957-3036. Available for Apple II and C 64. $50 (Apple); $35 (C 64).

Charles Goren: Learning Bridge Made Easy: CBS Software, One Fawcett Place, Greenwich, CT 06836; (203) 622-2525. Available for Apple II, C 64, and IBM PC. $80.

Creative Writer: Creative Software, P.O. Box 61688, Sunnyvale, CA 94086; (408) 744-0663. Recommended for C 64. $50. Also for Apple II and IBM PC/PC*jr*. $60–$80.

Dazzle Draw: (see *Bank Street* for manufacturer, address, and phone). Available for 128K Apple IIe/IIc. $60.

Early Games For Young Children: Springboard Software, 7808 Creekridge Circle, Minneapolis, MN 55435; (612) 944-3915. Available for Apple II, Atari, C 64, and IBM PC/PC*jr*. $35.

Extended BASIC 1.0: Public-domain software. Available for Atari. Obtain a copy through an Atari users' group or download via CompuServe.

Facemaker: Spinnaker, One Kendall Square, Cambridge, MA 02139; (617) 494-1200. Available for Apple II, Atari, C 64, and IBM PC/PC*jr*. $21–$25.

Fast Load: Epyx, 1043 Kiel Court, Sunnyvale, CA 94089; (408) 745-0700. Available for C 64. $36.

Flight Simulator II: subLOGIC, 713 Edgebrook Drive, Champaign, IL 61820; (217) 359-8482. Available for Apple II, Atari, and C 64. IBM PC/PC*jr* version available from Microsoft (see *Multiplan* for address and phone). $50.

Global Program Line Editor (GPLE): Beagle Bros., Inc., 3990 Old Town Ave., Suite 102C, San Diego, CA 92110; (619) 296-6400. Available for Apple II. $50.

Hitchhiker's Guide to the Galaxy: Infocom, 55 Wheeler St., Cambridge, MA 02138; (617) 492-1031. Available for Apple II, Atari, C 64, IBM PC/PC*jr*, Macintosh, and Tandy Model III. $35–$40.

Home Accountant: Haba-Arrays, 6711 Valjean Ave., Van Nuys, CA 91406; (818) 994-1899. Available for Apple II, Atari, IBM PC/PC*jr*, and Macintosh. $75–$150.

KoalaPad: Koala Technologies Corp., 3100 Patrick Henry Drive, Santa Clara, CA 95052; (800) KOA-BEAR. Available for Apple II, Atari, C 64, and IBM PC/PC*jr*. $100–$150. *KoalaPainter* included.

Kids On Keys: (see *Facemaker* for manufacturer, address, and phone). Available for Apple II, Atari, C 64, IBM PC/PC*jr*. $21–$25.

Letter Perfect: LJK Enterprises, 7852 Big Bend Blvd., St. Louis, MO 63119; (314) 962-1855. Recommended for 32K Atari. Also for Apple II and IBM PC/PC*jr*. $100.

Letter•Writer: Astro-Star Enterprises, 5905 Stone Hill Drive, Rocklin, CA 95677; (916) 624-3709. Recommended for Tandy Models I/III/4. Also for IBM PC/PC*jr*. $48.

MACH•5: Access Software Inc., 2561 S. 1560 W., Woods Cross, UT 84087; (801) 973-0123. Available for C 64. $35.

MacPublisher: Boston Software Publishers, Inc., 1260 Boylston St., Boston, MA 02215; (617) 267-4747. Available for Macintosh. $100.

Magic Slate: Sunburst Communications, 39 Washington Ave., Pleasantville, NY 10570; (800) 431-6616. Available for Apple II (64K or 128K required for some features). $90.

Andrew Tobias' **Managing Your Money:** MECA, 285 Riverside Ave., Westport, CT 06880; (203) 222-1000. Available for 128K Apple IIe/IIc and IBM PC, 256K PC*jr*. $199.

MasterType: The Scarborough System, 55 S. Broadway, Tarrytown, NY 10591; (914) 332-4545. Available for Apple II, Atari, C 64, IBM PC/PC*jr*, and Macintosh. $40.

MasterType's Writer: (see *MasterType* for manufacturer, address, and phone). Available for 128K Apple IIe/IIc. $70. Planned for C 64/128. $45.

Mickey's Space Adventures: Sierra On-Line, P.O. Box 485, Coarsegold, CA 93614; (209) 683-6858. Available for Apple II, C 64, and IBM PC/PC*jr*. $25–$30.

Microzine, Vols. 1–12: Scholastic Software, 730 Broadway, New York, NY 10003; (212) 505-3501. Available for Apple II. First issue, $15; $30 thereafter.

Movie Maker: (see *Music Construction Set* for manufacturer, address, and phone). Available for Apple II, Atari, and C 64. $33–$40.

Multiplan: Microsoft Corp., 10700 Northup Way, Bellevue, WA 98009; (206) 828-8080. Available for Apple II, IBM PC/PC*jr*, and Macintosh. $125 (Apple); $195 (IBM, Mac). C 64 version distributed by Epyx, Inc. (See *Fast Load* for address and phone.) $50–$60.

Music Construction Set: Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403; (415) 571-7171. Recommended for Atari and C 64. Also for Apple and IBM PC/PC*jr*. $23–$40.

The Music Shop: (see *Bank Street* for manufacturer, address, and phone). Available for C 64. $45.

The Music Studio: Activision, 2350 Bayshore Frontage Road, Mountain View, CA 94043; (415) 960-0410. Available for C 64. $30.

MY CALC: Computer Easy, 414 E. Southern, Tempe, AZ 85282; (602) 829-9614. Available for IBM PC/PC*jr*. $20.

PaperClip: Batteries Included, 30 Mural St., Richmond Hill, Ontario, L4B 1B5 Canada; (416) 881-9941. Available for Atari and C 64/128. $60 (Atari); $90 (C 64/128).

PFS:Write and **PFS:File:** Software Publishing Corp., 1901 Landings Drive, Mountain View, CA 94043; (415) 962-8910. Available for 64K Apple IIe/IIc with 80 col. card, C 64, and IBM PC/PC*jr*. $125 (Apple); $80 (C 64); $140 (IBM).

Planetfall: (see *Hitchhiker's Guide* for manufacturer, address, phone, and availability). $39 to $40.

PractiCalc II: PractiCorp, 44 Oak St., The Silk Mill, Newton Upper Falls, MA 02164; (617) 965-9870. Available for Apple II. $50.

The Print Shop and **The Print Shop Graphics Library, Vols. 1–3:** (see *Bank Street* for manufacturer, address, and phone). Available for Apple II, Atari, and C 64. $45–$50 (*Print Shop*); $25 each (*Graphics Library*).

ReadySetGo: Manhattan Graphics Corp., 163 Varick St., New York, NY 10013; (212) 989-6442. Available for 512K Macintosh. $125.

Rock 'N' Rhythm: (see *Facemaker* for manufacturer, address, and phone). Available for Atari and C 64. $27.

Rocky's Boots: The Learning Company, 545 Middlefield Road, Suite 170, Menlo Park, CA 94025; (415) 328-5410. Available for Apple II, C 64, and Tandy CoCo. Planned for IBM PC/PC*jr*. $50.

Sargon III: Hayden Software, 600 Suffolk St., Lowell, MA 01854; (800) 343-1218. Available for 64K Apple II, C 64, IBM PC/PC*jr*, and Macintosh. $50.

Scripsit: Tandy Corp., 1800 One Tandy Center, Ft. Worth, TX 76102; (817) 338-2335 Available for Tandy Models I/III/4. $40.

SideKick: Borland International, 4585 Scotts Valley Drive, Scotts Valley, CA 95066; (800) 556-2283. Recommended for IBM PC/XT. Also for Macintosh. $55 (copy-protected); $85 (copyable).

Snooper Troops, Case No.1 and **2:** (see *Facemaker* for manufacturer, address, and phone). Available for Apple II, Atari, C 64, and IBM PC/PC*jr*. $27–$33 each.

Songwriter: (see *MasterType* for manufacturer, address, and phone). Available for Apple II, Atari, C 64, and IBM PC/PC*jr*. $20.

SynCalc and **SynFile+:** Synapse, a division of Broderbund (see *Bank Street* for address and phone). Recommended for Atari. $50 each. *SynCalc* also for Apple II and C 64.

Telewriter•64: Cognitec, 704 N. Nob St., Del Mar, CA 92014; (619) 755-1258. Available for Tandy Color Computer. $50 (tape); $60 (disk).

Time Is Money: Turning Point Software, 11A Main St., Watertown, MA 02172; (617) 923-4441. Available for Apple II and IBM PC/PC*jr*. $100–$125.

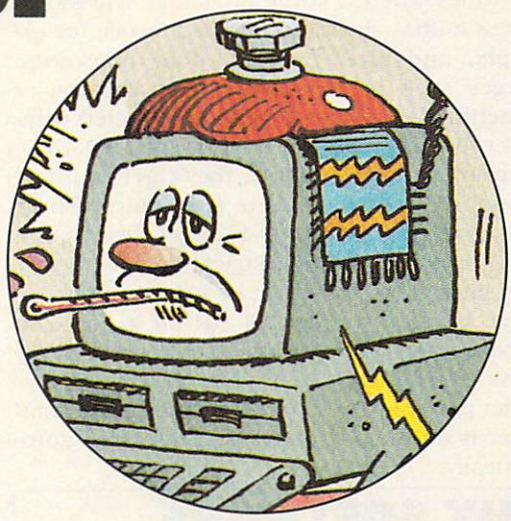
TRIO: Softsync, Inc., 162 Madison Ave., New York, NY 10016; (212) 685-2080. Recommended for C 64/128. Also for 128K Apple IIe/IIc. $100 (Apple); $70 (C 64/128).

Turbo Pascal and **Turbo Tutor:** (see *Sidekick* for manufacturer, address, and phone). Available for IBM PC and CP/M machines (such as Kaypro). $70 (Pascal); $35 (Tutor).

Typing Tutor III: Simon & Schuster, 1230 Ave. of the Americas, New York, NY 10020; (212) 245-6400. Available for Apple II, C 64, IBM PC/PC*jr*, and Macintosh. $40–$60. FC

How to Keep Your Computer Healthy

SEVEN LAWS OF PREVENTIVE MEDICINE



BY GEORGE DELUCENAY LEON

A large part of the success you and your family will enjoy with your computer depends on how you set it up. It is up to you to decide where to put it, how much desk space you need and what type of lighting or access best satisfies your family's needs. Equally important, if less obvious, are the choices you make about how to set up the system to avoid unnecessary repairs and promote reliable, long-lasting performance.

It pays to spend a little time organizing your work area so that it suits your computer as well as your family. Regardless of how much space you have (a corner of your den or an entire computer room), how many members of your family use the computer, or how many components there are to your system, there are a few basic factors—wiring, ventilation, dirt and dust, static electricity buildup, temperature, and stability of installation—that can directly affect how well your computer functions. Keep them in mind not only when bringing a computer into your home for the first time, but also whenever you add a peripheral to your system or select a new piece of computer furniture.

(1) WIRING

Since computers depend on electricity to function, the arrangement and reliability of your home's electric system will be critical to where you place your computer and the way it works. The availability of outlets (particularly grounded ones), the location of other electrical appliances in the house, and the overall stability of your incoming power supply should all affect how and where you set up your system.

Most computers, monitors, and printers have electrical cords that end in three-prong plugs. These should be inserted into three-prong grounded outlets. The location of the grounded outlets in your home will therefore partially determine where you should place your system. What if you don't have such an outlet? If yours is an older dwelling with only the more familiar two-prong outlets, don't despair. You can, in most cases, still use a computer by installing a grounded adapter onto your chosen outlet.

Grounded adapters cost approximately 45 cents and look like a two-prong plug with a small wire or metal loop attached. Pull out the fuse, or pull down the circuit breaker connected to the line before you begin converting a two-prong outlet to a grounded one. First remove the screw from the center of the wall plate. Use steel wool to get the screw bright and shiny. Then scratch the paint away from the wall plate where the screw makes contact. Plug the adapter into the two holes of the outlet and loop the wire over the screw. Your connection is now grounded.

Even if your home does have grounded outlets, if they support other heavy appliances it might be wiser to install an adapter and locate the computer elsewhere in the house. Connecting the computer to the same line you use for your refrigerator or air conditioner can severely tax the line and cause loss of data, glitches, and other problems. If the lights in the room dim every time the refrigerator goes on, the chances of losing data from the computer are high.

If the problem stems from a fault in the wiring of one of your appliances, have the unit fixed. If, on the other hand, the electrical current in your home frequently fluctuates as a result of erratic power supply, consider pur-

GEORGE DELUCENAY LEON *lives in Brooklyn, New York, and writes about high technology.*

THE ONLY WAY TO PROTECT THE COMPUTER AGAINST DIRT IS TO SET A RULE FOR KEEPING FOOD, DRINKS, AND CIGARETTES COMPLETELY AWAY FROM THE COMPUTER.

chasing a surge protector. Utility companies furnish voltage at approximately 110 volts. However, the electricity may fluctuate between 90 and 130 volts during the day. Most computers are not badly affected by these fluctuations since they usually take place slowly. But there are times when a surge of voltage will sweep across a line—during electrical storms, for example, and after brownouts or blackouts. Surges such as these can badly damage or sometimes even destroy an unprotected computer. While a fuse or circuit breaker will theoretically switch off a surge, they can't do it fast enough to protect delicate electronics. Surge protectors (which range in price from $50–$150) can switch off electrical charges before they enter your computer or printer. Look for surge protectors that will cut off a surge in "picoseconds" (1 trillionth of a second); many come conveniently housed in four- and six-outlet power strips, so that whenever the computer is on, their protection switches on automatically.

HEALTHY SOFTWARE

Here's what I've done to care for my computer library. I admit it. I like being organized. And I like to find the disk I want when I want it. I also heed the "do and don't" warnings on the back of disk envelopes. Do you?

Shortly after I brought my Apple home, I bought various disk boxes. Each cost about $20—all you need to spend unless you're getting a fancy oak case or one with a lock. The box sitting at my right hand, with the hinged cover and five partitions, holds about 40 of the disks I use most regularly. Ads claim the box holds 50, but it's not healthy to squash them.

Disks are arranged by application; those that get used together, stay together. So my *Apple Writer* program and data disks occupy the first niche, right in front of my wife's data disks in the second. A third niche contains programs I've written.

It's easy to keep categories separate because I plan ahead. I color code. That's why the labels tucked in when you buy disks often come in different colors. I use the red ones for *Apple Writer*, the blue for BASIC. However, all my disks are like the Ford Model T—they come in any color, as long as it's black. Sometimes I'm tempted to get those disks that are yellow or green or high-tech silver. Then I could really refine my color coding.

The other type of disk box I purchased is often called a "library case." It costs about three to five bucks and holds 10 disks—a perfect size for storing the originals of copyable programs or my older data disks. They also come in handy when I take my disks traveling.

Do you throw out the neat cardboard boxes your blank disks come in? While not as durable as a plastic case, you can't beat the price. I store my less important disks in them, with appropriate labels on each box.

Some of my disks don't live in cases. Many games stay in their original cartons, along with their easily misplaced reference cards and pamphleted instructions—as long as the carton fits in the small bookcase I've dedicated to all my computer stuff, that is.

Yes, there's more stuff: What about the books on programming or online services? And those books that arrive disguised as "manuals" or "documentation." They're set up on the middle shelf: productivity to the right, graphics to the left, and programming in the center. Library cases stand in a row on the top shelf, game cartons line the bottom. I like my computer bookcase.

When friends borrow software, I attach a sticker with my name and address on each disk. I never write directly on the label (that's one of those no-no's from the back of disk envelopes) and I don't use cellophane tape to attach the sticker. Tape could detach inside the disk drive, requiring repairs. Who needs that?

With kids, however, all of this carefully planned order could easily go right out the window. For families I recommend dedicating a disk case just for the kids' use. That way, they could at least easily put disks away, safe from dirt or pop. Alternatively, you could ask them to store cartridges or cassettes in a sturdy shoebox. And you could use stickers to color-code both box and program by category—educational software in one shade, games in another. Your next job would be to convince the little ones to match purple with purple, for example, and orange with orange. Good luck!

That's what it's all about; a lot of care and a little luck. I take care of my software library and it takes care of me.

—DAVID HALLERMAN

(2) VENTILATION

As electricity courses through the computer's internal wiring, heat starts building up inside its tough, plastic frame. If the heat gets too great, the monitor (or TV) will start developing waves, data in memory will be lost, and, in a worst-case scenario, wires will start melting and the computer will have to be sent out for repair. To avoid all this, computers come with vents to keep cool air circulating.

Wherever and however you decide to set up your computer, it is imperative to keep these vents free from obstructions and open to good air flow. If your computer has vents at the back or on the sides, do not place the unit against a wall or in a tight cabinet shelf. Likewise, if the vents are on the top of the system, you should not stack other peripherals directly over the computer. If space is at a premium, consider buying or building a stand that can support your monitor or disk drives, yet has enough room underneath for your computer to breathe. If a vertical solution is not ideal, try moving your printer to a nearby table; you do not have to cluster your whole system together in one spot. By getting longer cables than those that came with your system, you can often conveniently spread your equipment around. Note: Do not get carried away with over-long (15–30 feet) cables, since they can take on the unpleasant characteristics of an antenna and interfere not only with the operation of the computer, but with your TV reception as well.

(3) DIRT AND DUST

The delicate electronics of the computer are easily (and always adversely) affected by dust, dirt, liquids, and smoke. And, despite the hard, compact shell that surrounds it, the computer is in many ways wide open to infiltration by all kinds of foreign particles. The vents that provide air circulation are prime catchers of cigarette ash, drips of soda, cookie crumbs, etc., as are the little spaces between the keys of the keyboard. The slot in the disk drive is another perfect opening for all sorts of damaging grime.

The only way to protect the computer against dirt is to set, and rigorously maintain, a rule for keeping food, drinks, and cigarettes completely out of the computer room. If your kitchen and dining room are too far away to make this feasible, select or construct a place in the computer room, as distant as possible from the system, where all such consumables can be stashed. Otherwise you will find that it is all too easy to knock over a glass and have an instantly nonworking computer on your hands.

When not in use, your equipment should be shielded from the buildup of dust in the air with nonstatic covers. Commercially made ones are available for every computer brand and peripheral. Alternatively, you can cover the equipment with well-washed towels or

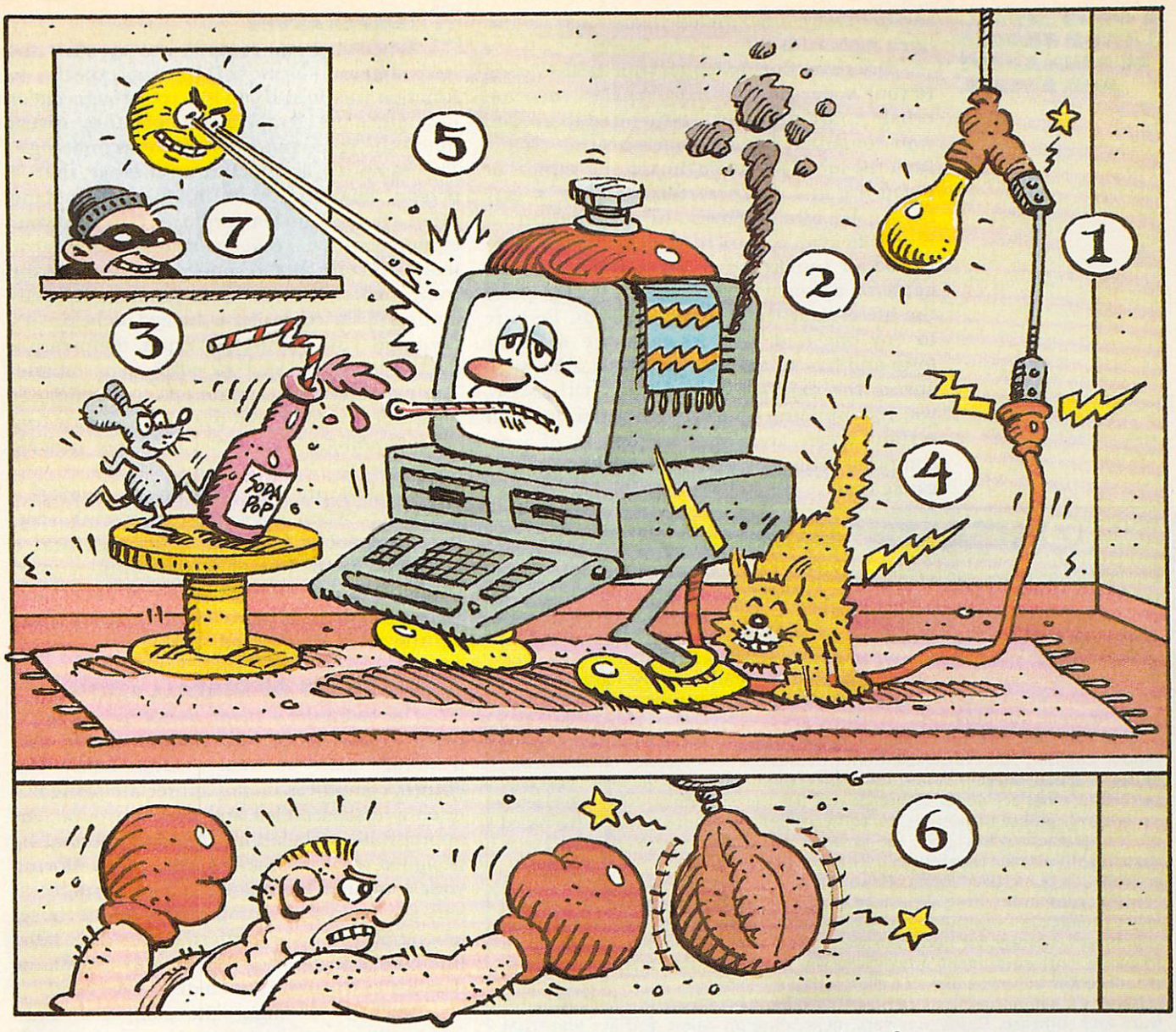


ILLUSTRATION BY ELWOOD H. SMITH

Your computer's worst enemies: **1.** *Bad wiring and erratic power supply;* **2.** *Inadequate ventilation;* **3.** *Dirt, dust, drips, and crumbs;* **4.** *Static electricity buildup;* **5.** *Temperature extremes;* **6.** *Unstable or rickety installation; and* **7.** *Theft, fire, vandalism, and accidents.*

sheets. Make sure they cover the system completely, and that you wash them once a week.

Even the best cared for computer system, however, needs a cleaning approximately every three months. You can either have it done professionally or do it yourself. (*See the "Hands On" series in* FAMILY COMPUTING, *beginning October 1985, for more information on doing it yourself.*)

4 STATIC ELECTRICITY

One of your computer's worst enemies is static electricity: an invisible agent that can, without warning, wipe out information on your disks or render your system inoperable. The spark you see, or sudden tingle you feel when you walk across a rug and touch a metal surface, such as a door knob, doesn't harm you because the current is so low. It can be fatal, however, to the chips in your computer or printer. There are two ways to avoid the damaging effects of static: by preventing its buildup or by getting rid of it through safe discharge. When choosing a place to put your computer, consider an uncarpeted room. If that doesn't work, there are a number of precautions which can lessen your chances of zapping a computer with static.

Place antistatic mats either under your keyboard, or on the floor under your workstation, to siphon off static built up from walking across the carpet. These mats can range in price anywhere from $40 to $150, depending on their size. There are also antistatic sprays available for less than $10. With twice-weekly application, these may help up to a point. Spray the carpeting and general desk area near the computer, but be careful not to spray the computer or the printer directly, since the spray may seep into the inner workings of the machines and cause corrosion and other damage.

If your computer starts acting "funny" by locking up or responding with odd letters on its screen, pause before hauling out the packing boxes and sending the computer off for repair. Look first at the clothes you are wearing as a possible cause of the problem. Certain clothes in particular can build up static—fuzzy sweaters, for example, or, as I have found out

A GOOD INSTALLATION SHOULD BE PERMANENT AND STABLE.

the hard way, unexpected items such as fur-lined moccasins.

Dry days, during which your clothes cling to your body and your hair crackles when you brush it, are prime for static buildup around your computer. If your home's heating system saps the air of moisture during the winter, or if you live in a dry, desert-like climate, it may be a good idea to invest in a humidifier. A humidifier can control the amount of moisture in the air (unlike water vapor from a boiling kettle or a morning shower) and can prolong the life of your computer equipment. Be sure to buy one that provides moisture in vapor form and has an accurate humidistat for measuring the room's humidity level. Otherwise, you risk building up *too* much water vapor in certain areas, including the inside of your computer. This can leave mineral deposits and cause rust.

7 'HEALTH' INSURANCE

Preventive measures can safeguard your computer up to a point, but you'll need an insurance policy to cover the rest. Standard home insurance policies protect your computer against the basics: loss from theft, fire, or vandalism. They cover only the "cash value" of your system, however. The contents of disks (software you have bought or developed yourself) or damage resulting from accidents (such as your dog knocking the monitor off the table and onto the floor) are not part of the deal. Neither does the insurance cover computers used for home business.

More complete coverage can be obtained through special extensions, called "endorsements," that are tacked onto the homeowner's policy either for free or for a small charge. Home insurance often provides "all-risk" coverage (including most accidents, although very few include damage through electrical surges), makes provisions for software, and reimburses for claims based on "replacement costs" (i.e., the amount you would have to pay for a new system with similar capabilities). Chances are, it will even cover the computer while it's being used for business.

A few companies have developed policies just for computers with much lower premiums than full homeowners' policies command. The policies provide broad coverage for both hardware and software, and offer the bonus of insuring your equipment even when you're on the road or moving. These usually cover business use as well.

Here is a sampling of companies that offer special policies for both hardware and software. Rates may vary, depending on where you live and what type of home or apartment you own (or rent). Check with your local agent about endorsements or special provisions that you can add to insurance policies you already carry. Note what the deductible is, if any, on a policy before making your choice. And don't procrastinate until it's too late.

Continental Insurance; 2 Corporate Place S., Piscataway, N.J. 08854; (201) 981-4224

Endorsement to homeowners' policy. Nationwide service. All-risk coverage, including all hazards that occur within 100 feet of your home, excluding damage from static electricity, magnetic fields, and power surges. Insures commercial, but not user-developed software. Covers business use. Rates: $8 addition to premium for $1,000 of coverage; $10,000 limit; no deductible.

Fireman's Fund; 777 San Marin Drive, Novato, CA 94998; (415) 899-2647

Endorsement to homeowners' policy. Worldwide coverage. Basic coverage except for damage from dust, static, power surges, etc. Insures both commercial and user-developed software. Covers business use. Rates: $2 addition to premium for $100 of coverage; $2,000 limit; no deductible.

Nationwide; 1 Nationwide Plaza, Columbus, OH 43216; (614) 227-7111

Included in standard homeowners' policy. Nationwide service. All-risk coverage. Insures both commercial and user-developed software. Covers business use. Rates: No extra fee for coverage up to $3,000; $8 for additional $2,000; $10,000 limit; no deductible.

Safeware, The Insurance Agency, Inc.; 2929 N. High St., Columbus, OH 43202; (614) 262-0559

Special policies just for computers. Nationwide service. All-risk coverage except for theft from an unattended vehicle. Insures commercial, but not user-developed software. Covers business use. Rates: $39 for $2,000 of coverage; $69 for $5,000 of coverage; $17,000 limit; $50 deductible.

—ROXANE FARMANFARMAIAN

5 TEMPERATURE

A personal computer is exactly what the term suggests—*personal*. You can expect it to function well even if you like your room cold or hot, since its temperature tolerance covers much the same range as any human being's. The computer is much less effective than a person, however, in its ability to withstand rapid changes in temperature. Carrying your equipment from a cold environment to a warm, moist one can lead to condensation inside the components. This can cause possible short circuiting (if the computer is turned on before it's dry) and rust. Likewise, rapid temperature fluctuations can lead to equipment fatigue. The metal and other materials in a computer will react to cold or heat by quickly contracting or expanding, thus stressing their delicate electronics.

Temperature extremes can also damage a computer. When choosing its roosting spot, take care not to place the equipment near a heater or in the line of direct, uninterrupted sunlight. Prolonged heat can sometimes cause warping of internal boards, and certainly won't do any disks much good, either.

6 STABILITY OF INSTALLATION

The computer's home is not only a workplace, but, when the equipment is not in use, a storage place as well. Though hardy machines, computers do not appreciate being frequently disassembled and moved around. An appropriate installation, therefore, should be designed to be permanent and stable. Moving your computer too often can lead to unnecessary jarring and bumping, which might cause, among other horrors, internal breakage, hairline cracks in the body or plug-in boards, or damage to the finely tuned disk-drive head.

Don't try to make the computer share space with another electrical appliance (such as a sewing machine) that will require a lot of plugging in and unplugging. This wears out the computer's cable connectors and increases the risk of twisting or breaking important wires. Hooking up the computer near a telephone or stereo can be perilous as well if your computer does not have adequate shielding (check your manual). The telephone's ringing causes coils in the receiver to give off a small magnetic field that might wipe out data from your disks. Stereo speakers have coils that act similarly.

Finally, consider the human traffic around your computer (even when it's not in use) and arrange to squirrel away all cords, rather than leaving them dangling or lying underfoot.

By planning these basics right into your setup, you can prevent untimely physical breakdown on the computer's part and distress on your own. These suggestions are the stitches in time that will save you money and heartache in the long run. Your computer is a precious investment—worth coddling a bit to ensure it a long, healthy life. FC

HELPFUL HINTS

TO IMPROVE YOUR SYSTEM

EDITED BY ROXANE FARMANFARMAIAN

Customizing your system so it fits your family's particular needs and habits is one of the great pleasures of computer ownership. Organizing your workstation to maximize the space at your disposal and devising ways to protect and streamline your system—these are but some of the improvements you can make to your system to give it a personal touch. Here is a handful of helpful hints to get you started—the rest is up to you.

Reminder: Turn off your computer and peripherals before tinkering with them. Parental guidance is recommended for young children undertaking these activities.

Up and Away With Those Cords.

Do you find that your cables and cords are always underfoot, and that your joysticks and touch tablets are constantly hanging precariously off of the table? A great way to keep track of all these "stringy" goodies is to drape them over hooks on the wall near your computer. An inexpensive plastic coatrack with one, three, or five pegs is ideal. Place the cords that never get changed on one side, and the joysticks, tablets, and other "moveables" on the other.

Pamper Your Disk Drive with Cool, Clean Air.

If you leave your disk drive on for extended periods of time, or if there is a lot of smoke or dust around your computer, use this tip to keep your system clean, cool, and healthy.

Place an inexpensive air purifier upside down over the air vents on the top rear of the drive. This will reduce the temperature of the chips inside and filter out much of the dust and smoke particles that enter the drive through the air. I chose the Norelco Model HB0999 because it is compact and very inexpensive, although other lightweight purifiers will also do the job.

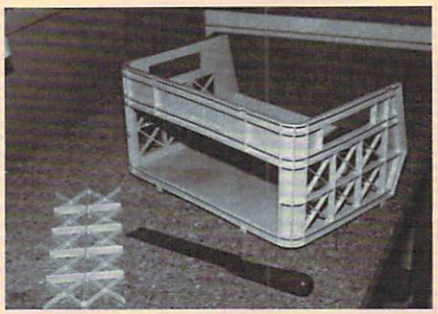
Make sure when using a purifier to remove all of the filters made of charcoal, citrus, or other filtering agents. Take particular care to remove any loose material that may fall into the drive and cause damage. I left only the coarse wire-mesh filter, to increase airflow. Airflow can be further enhanced by sealing the unit with a foam gasket placed between the purifier and the drive.

The appearance of the upside-down purifier can be improved by removing the legs.

SCOTT STEFANIDES
Swoyersville, Pennsylvania

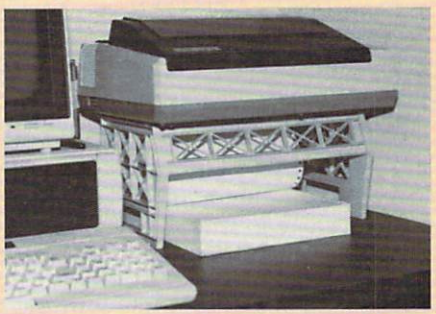
Convert a Plastic Storage Bin Into a Neat and Pretty Printer Stand.

Is your printer paper wedged inconveniently between your printer and the wall? Does changing your paper take unusual patience and skill? Try making this inexpensive, front-loading printer stand. It's compact, attractive, and available in five different colors. The front-loading feature makes it a breeze to switch back and forth between fanfold paper and single sheets, and even mailing labels.



You will need a "StorageMate" or other modular plastic storage bin that measures $7\frac{1}{16} \times 14 \times 9\frac{1}{4}$ inches (available at Sears and other houseware stores for approximately $4). Using a heavy knife or fine-toothed saw, cut out the back-side webbing of the bin.

Turn the "ex-storage bin" upside down and a printer stand will appear before your eyes. Depending on your printer, you may find that by cutting notches in the bottom webs you'll be able to "lock" your printer into place on the stand.



Feed your paper through the hole in the back and change it with ease from the front.

LESLIE PHIPPS
Cary, North Carolina

Increase Your Computer's Range by Putting it on Wheels.

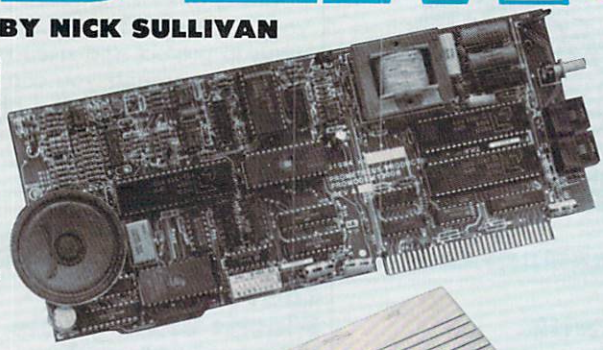
If the place where your family finally agreed to set up the computer was a compromise solution, try putting your computer on wheels. A used typewriter trolley with a second shelf can contain the whole system: keyboard and monitor on top, disk drives and printer (if you have one) on the bottom. Make sure the stand is stable. Place a thick foam typewriter pad or antistatic mat under each element of the system—computer, disk drive, etc.—to absorb any bumps or vibrations on the way from one room to another. Don't try to carry the trolley up or down stairs. If you are hooking the computer into different televisions or monitors, try attaching permanent computer switch boxes to each set to make the move faster, and to cause less wear and tear on your plugs.

JAMES FOOHEY
Los Angeles, California

BUYER'S GUIDE TO MODEMS

BY NICK SULLIVAN

Hayes Smartmodem 1200



Prometheus ProModem 1200B

The Apple Personal Modem

Novation Professional 2400

General Electric Modem: 3-8200

Commodore 1660

EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT HOOKING YOUR COMPUTER TO THE PHONE LINES

People often have a lot of trouble with printers, and understandably so. A printer has to work with your computer *and* the software you use. Getting the three elements to work together is no picnic.

The same is true of computer communications with a modem. The modem needs to be compatible with your computer and communications software. On top of that, your system has to mesh with the system you're calling! Things can and do go wrong.

Even getting started can be an adventure. Where do you go for help? Computer salespeople aren't necessarily experts in communications. They want to sell what they have in stock and pick up their lingo from the user manuals (which are not written by the E.B. Whites of the world). Confusion supreme!

It would be nice to report that there's an easy way around this. There's not, really, except to get started. You'll find that it's not that hard. All modems work, and most work pretty well. Usually, it's easier to get a modem than a printer to work with your system. And since many modems are sold with software, you may not have to run around trying to get a match.

The following questions and answers address the fundamental issues concerning modems and communications. The chart lists basic features of modems. While more can be said about modems, we feel the less said, the better. Learn by doing!

NICK SULLIVAN *is senior editor at* FAMILY COMPUTING.

1 MODEMS

Q. What's a modem?

A. A modem is a device that allows you to connect your computer to the phone lines. On the sending end, a modem converts computer signals to phone signals; on the receiving end, a modem converts phone signals back to computer signals.

Q. What can I do with a modem?

A. A modem allows you to make a telephone call from your computer to other computers and transfer information back and forth. You can exchange files and programs with a friend down the street; join a Special Interest Group on an information service such as CompuServe or The Source; do high-level research on a specialized data base such as Dialog or NewsNet; pay your bills through a home-banking service, such as those run by Citibank or Bank of America; get stock quotes from Dow Jones News/Retrieval; send and receive electronic mail via MCI Mail or Western Union's EasyLink; or shop through a videotext service such as Viewtron. Many services include "start-up kits" or trial offers in modem boxes.

Q. Do I need software to use a modem?

A. Yes, for all practical purposes. You need communications software, which is sometimes called "terminal soft-

ware." This sends the characters you type through the modem to the computer on the other end and displays on the screen what the other computer sends you. Most communications software also allows you to give commands to the modem—such as what number to dial—and to send and receive files as a unit and automatically save them to disk. In some ways, communications software is similar to the print-formatting functions in word-processing software that allow you to send commands to your printer. A few modems have software built in, and many others are sold with software on disk (*see chart*).

Q. Will modems work with all phones?

A. In general, yes, but there are exceptions. Most modems will make calls on both tone and rotary (pulse) phone systems, though some are designed specifically for one or the other. If you have a call-waiting function on your phone, the modem will make calls but get knocked off the line every time someone calls you. The only modem we know of that isn't disturbed by call-waiting is the AT&T Model 4000.

Also, most modems are designed to be used with modular phone jacks, the type that you can easily plug into or take out of your phone. With these modems, you just take the jack from your phone and plug it into the modem.

Q. What if my phone doesn't have modular jacks?

A. If you have an old-fashioned "hard-wired" phone, you need a modem with an "acoustic coupler," which is a set of cups into which you place your phone (*see photo of GE 3-8200*). They are needed in most hotel rooms and in pay phone booths, which use hard-wired phones. Unless you need them for your phone, acoustic couplers aren't recommended because they aren't as reliable as standard modems. Some "designer" phone headsets won't fit securely into an acoustic coupler.

Q. How do I connect a modem to my computer?

A. There are two basic types of modems—internal and external. Internal modems are sold for computers such as the Apple IIe and IBM PC, which have internal slots for circuit boards. But all computers can use external modems, usually connected to the serial port.

As noted in the chart, many modems have an RS-232C interface. On computers with standard RS-232C serial ports, a standard 25-pin serial cable will make the connection. On computers with nonstandard interfaces (such as Atari 800XL, Commodore 64/128, Apple IIc, and Macintosh) special cables are required. These should be sold with the modem. Make sure you know where to get a cable before you buy a modem.

Another kind of external modem that is less common is the plug-in modem. It doesn't require cables and merely plugs into the back of a computer. You can find such a modem for the Commodore 64/128 .

If you're worried about making the right connection, the conservative approach is to buy a modem made by the manufacturer of your computer (Apple, Atari, Commodore, IBM, Tandy, etc.). Then you can be sure it will work with your computer.

Q. What's the difference between 300-baud, 1200-baud, and 2400-baud modems?

A. The baud rate of a modem indicates how fast it will send and receive data. A 300-baud modem will send a little more than one double-spaced page per minute. A 1200-baud modem is four times faster and will send more than four pages per minute.

The newest kind of modem operates at 2400 baud. These are considerably more expensive and can be cost-justified only for people who operate businesses dependent on computer communications.

Q. If I have a 300-baud modem, can I communicate with a 1200-baud modem?

A. Yes, but at 300 baud, not 1200 baud. In any connection, both modems must operate at the same speed. Your 300-baud modem can't operate at 1200 baud, but the 1200-baud modem *can* operate at 300 baud.

Q. How much do modems cost?

A. You can find 300-baud modems for $100 to $200, though some cost less than $100; 1200-baud modems range in price from about $200 to $600; and 2400-baud modems go from $500 to $900. As with other products, you may get a better deal through a mail-order house if you know what you want beforehand. When pricing modems, always factor in the cost of a computer-to-modem cable and software, unless they are included.

Q. What charges will I incur using a modem?

A. The phone company treats a computer call as it does a voice call. You pay the same rates. Thus, it pays to make local calls when possible. Beyond that, most information services charge for usage by the minute; often they charge more for 1200-baud usage than 300-baud.

Fortunately, major information services have hundreds of access numbers across the country, so people in large cities pay only for a local call plus the service's rates. If there are no access numbers in your area, you'll either have to call long distance or go through Tymnet or Telenet. These are continent-wide communication networks devoted exclusively to computer communication. They charge $10 per hour during business hours and $2 per hour nights and weekends.

Q. What does "Hayes-compatible" mean?

A. Much as IBM has become the dominant standard for business computers and software, Hayes has become the standard for 300- and 1200-baud modems. Most manufacturers make modems functionally similar to Hayes modems. That is, the command that causes Hayes modems to dial a number or to change baud rate has the same effect on a Hayes-compatible modem. Furthermore, most communications software is written to work with Hayes modems, which means it will also work with Hayes-compatible modems.

Q. What features should I look for in a modem?

A. First, if you can afford one, a 1200-baud modem makes sense. It will cost more than a 300-baud modem, though over time you will probably recoup the cost in reduced phone charges, especially if you plan to do anything more than chat online. Second, Hayes compatibility is a good feature that will probably make your life easier. Beyond that, an auto-dial feature is handy. With the right software, auto-dial modems allow you to store phone numbers in memory and then dial them from the keyboard by pushing one key.

Auto-answer capability is not as important for most people but gives you additional options. With the right software, an auto-answer modem will answer an incoming call by itself. Some communications programs even have a "remote" mode so that you or other callers can leave information in or retrieve it from your computer.

Q. Why do some modems have lights on the front while others are plain?

A. Lights don't affect the way a modem operates; they just keep you informed as to what's happening (dialing,

300-, 1200-, and 2400-BAUD MODEMS

Manufacturer	Model	Price	Software Included	Internal/ External	Hayes-Compatible	Features	Computer & Interface
300 BAUD							
Anchor Automation	Volksmodem	$79	—	E	NA[11]	Aux. phone jack	Cables for many computers, $12.95 ea.
Apple Computer	Modem 300	$225	*Apple Term*[3]	E	No	—	All Apple computers (no software with Mac), cable included
Atari	XM301	$49	*XE Term*	E	No	LED[6]	Atari[12]
CDI	Mitey Mo	$99	*Smart 64 Terminal +4*	E[2]	No[4]	Aux. phone jack	C 64/128, cable included
Coleco	AdamLink	$99	*AdamLink*[3]	I	No	—	Adam
Commodore	1660/Modem 300	$129	*Common Sense*	E[2]	No[4]	Speaker	Commodore[8]
E+E DataComm	Avatex 300	$64	—	E	Yes	Aux. phone jack	RS-232C
General Electric	3-8200	$119	—	E	No	Acoustic coupler & direct connect, LED[6]	RS-232C, Atari[12]
Hayes	Smartmodem 300[5]	$199	—	E	Yes	LED[6], speaker	RS-232C
	Micromodem IIe	$199	*Smartcom*	I	Yes	Speaker	Apple II series[9]
Microperipheral	Autoprint Microconnection	$69	Yes	E	No	Aux. phone jack, LED[6]	Atari and Commodore[14], Centronics parallel
Novation	The Cat	$189	—	E	NA[11]	Acoustic coupler, LED[6]	RS-232C
Tandy	AC-4	$119	—	E	NA[11]	Acoustic coupler	RS-232C
	DCM 3	$59	—	E	No	—	RS-232C
Trans Com	TCM-1	$109	Yes	E[2]	No[4]	Aux. phone jack, LED[6]	C 64/128
U.S. Robotics	Password 300	$199	—	E	Yes	Speaker	RS-232C
ZOOM Telephonics	ZOOM/MODEM IIe	$179	*ZOOM Communications*	I	Yes	Speaker	Apple II series[9]
1200 BAUD							
Anchor Automation	Volksmodem 12	$299	—	E	Yes	—	RS-232C, cables for many computers—$12.95 ea.
Apple Computer	The Apple Personal Modem	$399	—	E	Yes	LED[6], speaker	All Apple computers, cables $29 ea.
AT&T	Model 4000	$499	*SoftCall* ($79)[7]	E	Yes	Aux. phone jack, LED[6], speaker	RS-232C
Cermetek	Apple-MATE 1200	$299	Built in	I	Yes	Speaker	Apple II series[9]
	1200LC	$199	—	E	Yes	Aux. phone jack, LED[6], speaker	RS-232C
	1200TPC	$149	*QC-Modem*	I	Yes	Speaker	IBM PC
Commodore	1670/Modem 1200	$199	*Common Sense*	E[2]	Yes	Speaker	Commodore[8]
E+E DataComm	Avatex 1200	$199	—	E	Yes	Aux. phone jack, LED[6]	RS-232C
General DataComm	Acculine 1200	$499	—	E	Yes	Aux. phone jack, LED[6], speaker	RS-232C
Hayes	Smartmodem 1200	$599	—	E	Yes	LED[6], speaker	RS-232C
	Smartmodem 1200B	$549	*Smartcom II 2.0*	I	Yes	Aux. phone jack	IBM PC
Microcom	MacModem	$699	*MacModem*	E	No	—	Macintosh
	ERA 2 1200	$499	*ERA 2*	I	No	Aux. phone jack, speaker	IBM PC/PCjr, Apple II series[9]
	ZX 1200	$699	—	E	Yes	LED[6], speaker	RS-232C
Novation	Apple-Cat 212	$319	*Com-Ware II*	I	No	Aux. phone jack	Apple II series[9]
	Smart Cat Plus	$499	*Mite*[1]	E	Yes	Aux. phone jack, LED[6], speaker	RS-232C
Prentice	POPCOM C150	$465	*PFS: Access*	I	Yes	Aux. phone jack, speaker	IBM PC
Prometheus	ProModem 1200	$495	—	E	Yes	LED[6], speaker	RS-232C
	ProModem 1200A	$449	Built in	I	Yes	—	Apple II series[9]
	ProModem 1200B	$399	*Mite*	I	Yes	Speaker	IBM PC
	ProModem 1200M	$549	*ProCom-M*	E	Yes	LED[6], speaker	Macintosh, cable included
Racal-Vadic	Maxwell 1200V	$295	*CommuniKit* ($79)[13]	E	Yes	—	RS-232C
	Maxwell 1200PC	$295	*George 2.0*[7]	I	Yes	—	IBM PC
Tandy	PC Modem 1200	$299	—	I	Yes	Aux. phone jack	Tandy 1000/1200HD, IBM PC
	DC-2212	$399	—	E	No	—	RS-232C
Trans Com	TCM-1200	$225	*TransTerm*	E	No[4]	Aux. phone jack, LED[6], speaker	C 64/128
Transend	PC ModemCard	$241	—	I	Yes	Aux. phone jack, speaker	IBM PC
	InfoPhone 1200	$385	—	E	Yes	Same as above	RS-232C
U.S. Robotics	Password 1200	$499	—	E	Yes	—	RS-232C
ZOOM Telephonics	ZOOM/MODEM PC1200	$499	*ZOOM/DISK, PFS: Access*	I	Yes	—	IBM PC
2400 BAUD							
Anchor Automation	Signalman Lightning 24	$599	—	E	Yes	Aux. phone jack, LED[6], speaker	RS-232C
Cermetek	2400 Modem	$745	—	E	Yes	Same as above	RS-232C
Hayes	Smartmodem 2400	$899	—	E	Yes	Same as above	RS-232C
Microcom	MacModem 2400	$999	*MacModem*	E	No	Same as above	Macintosh, cable included
Multi-Tech	MultiModem224	$795	—	E	Yes	Same as above	RS-232C
Novation	Professional 2400	$795	—	E	Yes	Aux. phone jack, LCD[10], speaker	RS-232C
Racal-Vadic	Maxwell 2400V	$595	*CommuniKit* ($79)[13]	E	Yes	Aux. phone jack, LED[6], speaker	RS-232C
U.S. Robotics	Courier 2400	$895	—	E	Yes	Same as above	RS-232C

Notes
1. IBM PC, Kaypro, and Macintosh versions available. **2.** Cartridge. **3.** Software doesn't transfer files. **4.** Commodore 1650-compatible. **5.** Apple IIc version ($239) includes IIc cable and *Smartcom I*. **6.** Light-Emitting Diodes (display lights). **7.** Software works with IBM PC and compatibles. **8.** Commodore includes C 64/128/16, VIC-20, Plus/4. **9.** Not including the IIc. **10.** Liquid Crystal Display—modem status in English. **11.** Not applicable to manual-dial modems. **12.** Atari includes Atari 130XE, 400, 600XL, 800, and 800XL. **13.** IBM PC or Macintosh kit includes cable and communications software. **14.** Versions available: Atari 400, 600XL, 800, 800XL; C 64/128; and VIC 20.

sending data, receiving data, etc.). Because computer communications can sometimes be confusing, lights are reassuring. Some modems have speakers, which also allow you to "follow" your call—you can hear it dial, etc.

Q. Can I keep both my phone and my modem connected to the same outside line at the same time?

A. Yes, but you will need two phone plugs on your modem—one for a line from your telephone and one for a line to the jack on the wall. Not all modems have two jacks. (Those that do mention an auxiliary phone jack under "Features" in the chart.) If yours doesn't, you can add an inexpensive "Y" adapter with two jacks. And, of course, if your computer is using your phone line, you can't talk over the line at the same time, but on some modems you can switch easily from one to the other.

Q. What's a "voice-data switch"?

A. On many manual-dial modems, you dial your telephone with the switch on VOICE. When you hear a high-pitched computer tone at the other end, you flick to DATA, which completes the connection. Also, if you and a friend both have modems connected, a voice-data switch allows you to talk by voice, then switch to computer communications by flicking the switch to DATA.

Q. With all these possible features to consider, how do I go about choosing a modem for my computer?

A. Don't worry about the features until you get your basic needs sorted out. Figure out what speed you want and what modems will work with your computer. Then shop on price and see how many features you can afford.

Some modems come with software, which is a plus; others come with cables, another plus. You can also find internal or external modems, modems with a speaker or without, modems with one jack or two, modems with front-panel LED lights, etc.

2 COMMUNICATIONS SOFTWARE

Q. How important is communications software?

A. Software is key. Anything you want to do must be done through software. Thus, if you want to operate at 1200 baud, your modem and software must both have that capability. If you want to store numbers and automatically dial them from the keyboard, both your modem and your software must include this feature. And so on.

Q. Can all communications software transfer files to and from my disk drive?

A. No. The ability to send and receive files is a feature often lacking in communications software. A lot of software will allow you to call and connect with another computer and type and read messages, but not send a disk file over the line or save what you are receiving to disk. Look for "file-transfer" capability, which will let you send a file from disk.

Q. What's a "capture buffer" and how is it used?

A. In a communications sense, a buffer is a part of your computer's memory that is free to receive data when you're online. Say you're on Dow Jones/News Retrieval reading stock quotes. When you see something especially interesting, you might "open" your buffer so that everything you read goes into the computer's memory. When you've read all you want, you "close" the buffer. Depending on the software you are using, you may then be able to call up the buffer's contents onto your screen, edit it, print it out, and/or save it to disk.

Q. What's a "protocol"?

A. An error-checking protocol is a set of rules, used for automatic transfer of files, which is built into some communications software. These rules help the communicating computers to catch and correct errors caused by phone-line problems. For this to work, both computers must be using the *same* protocol. The most common ones are XMODEM (which has several versions) and CompuServe's "B" protocol.

You probably don't have to worry about protocols unless it's especially important that every character of the file is transferred correctly, such as when you're sending or receiving a machine-language program.

Q. Can I print when I'm online?

A. Sometimes yes, sometimes no—it depends on your software. Look for software that lets you print out everything you read on the screen as it comes over the phone line (if your printer is connected and turned on).

This "print-out" feature is particularly useful when reading electronic mail or browsing through an information service. In these cases, it's preferable to "dump" on-screen data to the printer, rather than saving to disk and printing from there.

Q. Can I use my modem to send a letter I've written with my word-processing program?

A. Yes, if your word processor stores the files on disk in ASCII format. (ASCII, the American Standard Code for Information Interchange, is the code most micros use internally to represent text.) If your communications software can transfer files, it will want files stored in ASCII format. Not all word-processing programs can store files in this fashion.

Sending non-ASCII files directly to someone who has the same word-processing program is possible, but generally not worth the trouble.

3 THE FUTURE

Q. What does the future hold for computer communications via phone lines?

A. • Higher speed and greater accuracy. Just around the corner are 9600-baud modems that can work over ordinary phone lines.

• Greater integration of computer and voice communications. Already some systems will "read" your electronic mail to you using a computer-synthesized voice, and complex electronic answering systems can organize both voice recordings and electronic-mail messages and deliver them in any form.

• Control of your computer—and your home—from any phone anywhere. You call home, your computer answers the phone, and, by pushing buttons on the phone, you can tell the computer to start the meat roasting or to wake up Molly in half an hour—or to call you if there are any important messages.

MANUFACTURERS

ANCHOR AUTOMATION (818) 997-7758; APPLE COMPUTER (800) 538-9696; AT&T (201) 898-6000; CDI (415) 633-1899; CERMETEK MICROELECTRONICS (408) 752-5000; COLECO INDUSTRIES (800) 842-1225; COMMODORE BUSINESS MACHINES (215) 431-9100; E+E DATACOMM (408) 263-1833; GENERAL DATACOMM (203) 574-1118; GENERAL ELECTRIC CONSUMER ELECTRONICS (315) 456-0123; HAYES MICROCOMPUTER PRODUCTS, INC. (404) 449-8791; MICROCOM INC. (617) 762-9310; MICROPERIPHERAL CORP. (206) 881-7544; MULTI-TECH SYSTEMS, INC. (612) 631-3550; NOVATION INC. (800) 423-5419; PANASONIC (201) 348-7000; PRENTICE CORP. (408) 734-9810; PROMETHEUS PRODUCTS (415) 490-2370; RACAL-VADIC (408) 946-2227; TANDY (817) 338-2393; TRANS COM (312) 543-9055; TRANSEND CORP. (408) 946-7400; U.S. ROBOTICS (800) 342-5877; ZOOM TELEPHONICS (800) 631-3116. FC

HANDS ON FROM CPU TO SUPERSYSTEM—DO-IT-YOURSELF ENHANCEMENTS

BY HENRY F. BEECHHOLD

(Part Three of a Six-Part Series)

The neck bone's connected to the head bone . . .

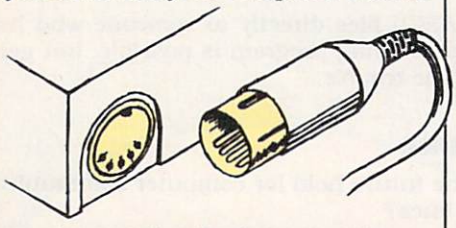
—Anon. (traditional song)

Having done a bit of tinkering, snooping about, and computer housecleaning (*see last month's "Hands On: Clean Your Computer and Look Around Inside"*), you're ready to step beyond the narrow confines of the ho-hum basic computer system. I mean, there's just no joy in facing the future with nothing but a computer, video display, and a lonesome disk drive.

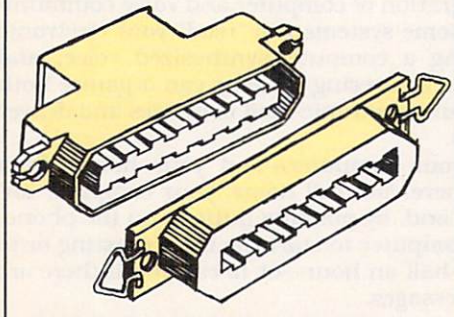
GETTING INTO INTERFACES

Any component you add to your system must be *interfaced* in some way. For certain items, interfacing is simply a matter of shoving a plug into a socket. For others, it's not quite so simple.

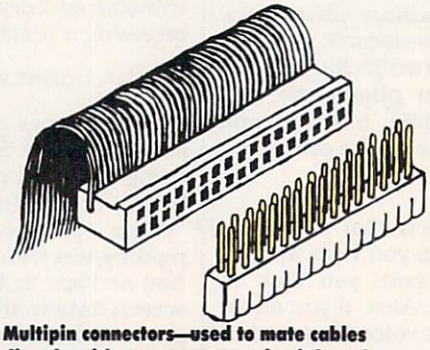
For now, though, let's examine plugs and sockets. Here are some of the common "mating connectors" you'll meet in your computer travels:



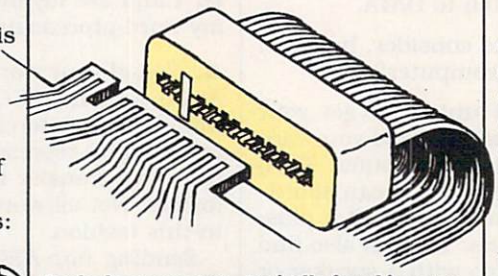
DIN—for *"Deutsche Industrie Norm"* or "German Industry Standard." Examples: Commodore 64 serial port, video monitor, and power connections.



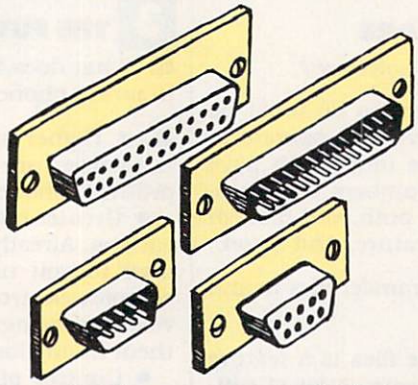
Centronics—named for the company that developed this kind of interface. Example: nearly any printer claiming to be "Centronics-compatible."



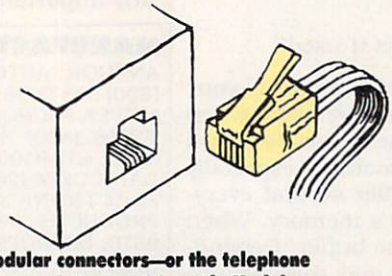
Multipin connectors—used to mate cables directly with components on circuit boards.



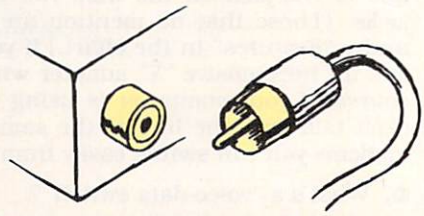
Card-edge connectors—typically found in game-cartridge interfaces. They connect (and physically grasp) internal circuit cards.



DB-nn subminiature connectors—"nn" indicates the number of pins in the connector. Thus, DB-9 (commonly used as a joystick connector) has nine pins; DB-25 (the informal standard for serial interfacing) has 25 pins.



Modular connectors—or the telephone company's two cents' worth. Modular interfacing is required between a "direct-connect" modem and the telephone line. Modular connectors are also sometimes used for hooking up keyboards and light pens.



RCA connectors—used to connect lines from your computer to video and audio inputs on your monitor, your stereo, or on an RF modulator connected to your TV.

INTERFACING INS AND OUTS

The purpose of an interface is to establish a connection between a computer and a peripheral so that electronic circuitry (hardware) and device-driver programs (software) can manage communication between the "host" (the computer) and the "guest" (the peripheral).

This communication takes place through an I/O (input/output) facility called a "port." Externally, I/O ports look like connectors. Inside your computer, each physical port corresponds to a numbered location, and all communication between the computer and the peripheral involves writing data to, and reading it from, this location. Part of the purpose of a driver program is to make sure the correct port is open and ready to do business with the peripheral you've added. In some cases, the peripheral itself must be set, via switches, to match the port location—otherwise, problems can arise. For example, if you've switched your Commodore printer to act as device 5, while your computer still thinks it's device 4, the computer and the printer aren't going to get along at all. This problem can be fixed most easily by reconfiguring the printer to act as device 4, by resetting its DIP switches according to simple instructions in the manual. (Alternatively, if whatever software you are using offers you the option, you can temporarily reconfigure it to send printer output to device 5.)

This business of ports, addresses, and device numbers isn't meant to scare you. It simply means there's sometimes more to interfacing than meets the eye. In fact, matching up plugs and sockets is only part of the interfacing story—in many cases, before you can use a peripheral, you'll

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have to configure it (and/or your computer) in certain ways. However, though problems like these can be frustrating, they're usually pretty easy to solve. And they reflect the considerable flexibility that exists in setting up a complete computer system—provided you know what your options are in preventing conflicts and discrepancies between components. This kind of knowledge is gained by reading manuals closely and by—need I say it?—cautious experimentation.

PRACTICAL INTERFACING

Broadly speaking, there are two patterns of data communication: parallel and serial. The ins and outs of these patterns will be the topic of the next "Hands On." For now, let's look at some typical interfacing situations you may encounter as you expand your computer system.

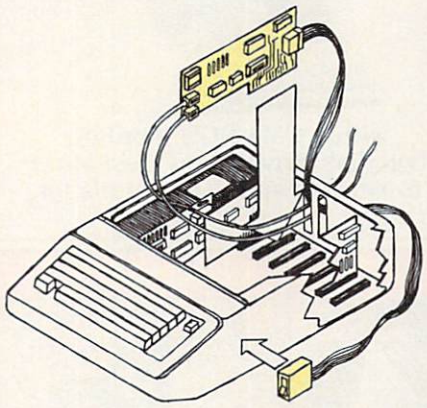
There's hardly any challenge to expanding your system with peripherals from your computer's original manufacturer. Hooking up such "first-party" peripherals is usually just a matter of plugging in and turning on. Unfortunately, first-party peripherals are often more expensive than "better," third-party equipment. Moreover, the variety and capabilities of peripherals produced by a computer manufacturer tend to be limited by the manufacturer's preconceived notion about what's "appropriate" for its computer. Thus, Commodore doesn't make a 5- megabyte hard disk for the C 64.

You can bet, however, that someone else does. For those of you who feel you'll get into trouble adding third-party equipment to your (up to now) pristine PCs, rest easy. Although the computer manufacturer may want you to believe that dire consequences will result if you attempt to attach "alien" peripherals, in most cases, a company that offers an alien disk drive, or printer, or something-or-other has worked out the mysteries and you won't have any special difficulties. But because there's always a chance for "Murphy's Law" to operate, try before you buy, whenever feasible. Or, at minimum, get the seller's assurance in writing that satisfaction will be guaranteed.

THE CHALLENGE OF CONFIGURATION

When you add expansion boards (for memory, enhanced graphics, additional disk drives, and the like), be aware that the plugging-in part is usually easy. Where you may run into a modicum of difficulty is: 1. in setting the various switches correctly, and 2. in incorporating special software or reconfiguring existing software to take advantage of the new equipment. Pick the dealer's brains, or, better, make him work for his sale!

Consider this: You want to install an internal modem in your Apple IIe. The unit will require one of the several card slots the IIe provides for adding internal devices. Must it be placed in a particular slot? If so, is that slot free in your machine? Assuming the modem card doesn't come with terminal software (though many do), will your current terminal program support the new card in the slot in which you intend to put it? Think about all these things before you buy, or be prepared for disappointment!



Assuming you (and your dealer) have worked out a reasonable strategy for installation, putting in the modem card should be fairly easy. When you unpack the card, you'll notice that there are two modular "female" connectors attached to it. One of these connectors will likely be marked "line," indicating that it will ultimately be attached (via a modular cable with a "male" plug at each end) to the wall jack your telephone's hooked up to. The other will probably be marked "phone." Another modular cable will be needed to hook up this connector to your telephone unit (the extra cable will probably come with the modem).

Attached to the modem board may also be a short cable with a switch on it. This switch is designed to run out of the back of your Apple's enclosure, and will probably have pressure-sensitive adhesive backing so that you can stick it on the side of the computer within easy reach. The switch is used for setting the "duplex" of the modem at half or full.

To hook up the modem card (*see illustration*), first turn the Apple off and remove the power cord from its receptacle in the rear. Then remove any monitors, disk drives, etc., you may have placed atop the Apple. Remove the top of the Apple's enclosure. The card slots lie in a row along the rear of the motherboard. Find the proper slot on the motherboard according to the modem documentation. Holding the modem card by its edges, carefully line up its "male" card-edge connector against the card slot and press down. You may have to jiggle the modem card a little to seat it in place, but don't force things.

When the modem card's in place, check the rear panel of the IIe immediately behind it. There will be a pass-through aperture (for cables) there, covered with a piece of plastic. Using a flat screwdriver, carefully pry off this plastic cover. Pass the modem's duplex switch back through the aperture and attach it to the side of the box. Then run your modular cables in through the aperture from the rear and plug them into the appropriate "female" receptacles on the modem card. Lift your telephone receiver and listen—if you get a dial tone, all's well so far.

Don't replace the top of the Apple yet, though. You'll probably need access to the modem card's DIP switches for configuration. Part of the process of setting the card's switches may relate to the terminal software you're going to use. Another switch or switches may have to be set, depending upon which slot you've placed the modem in. This should present no problem, assuming you've done your homework and everything works as expected.

Unless your terminal software is configured ahead of time to work with this particular modem card in the slot you've chosen, there's one more step before you're finished. Replace the Apple's top, plug in the computer again, and boot your terminal program. Go to the "configuration menu" and perform the necessary steps to designate the type of modem you're using and its card slot. Again, assuming you've done your homework, this should be a cinch.

KEEP ON JAZZING

The moral of the story is that your computer system can be jazzed up in lots of ways and that you're capable of doing most of the jazzing up! You certainly should not be afraid to try. Just don't overreach yourself, and don't be shy about asking for help—from dealers, manufacturers, and others—before you lay your money on the line.

Revealed next time: RS-232, IEEE-488, Centronics, baud rates, handshaking, parity, and other arcana of communication in the system. FC

ANNOUNCING

THE SECOND ANNUAL COMPUTING FAMILY OF THE YEAR CONTEST

FIRST PRIZE

128K APPLE IIC
with color monitor and stand; retails for $1,249.

SECOND PRIZE

512K ATARI 520ST
computer, RGB monitor, and 360K disk drive; retails for $999.

THIRD PRIZE

HAYES SMART MODEM 1200
with Smartcom II telecommunications software; retails for $748.

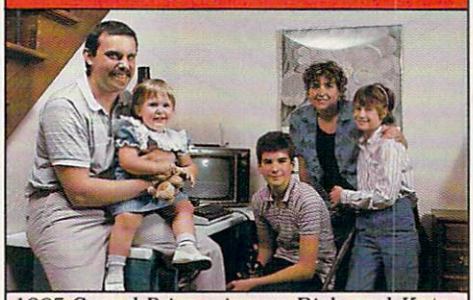
FOURTH PRIZE

14-INCH THOMPSON RGB MONITOR
(Apple/IBM); retails for $499.

GRAND PRIZE

256K TANDY 1000
with a CM4 RGB monitor, two disk drives, and *DeskMate* integrated software; retails for $1,650.

1985 WINNERS



1985 Grand Prize winners Rich and Kate Mancini, with son Matt and daughters Shannon and Tessa.

FIFTH PRIZE

$250 WORTH OF SOFTWARE
from the following companies: Activision; Avalon Hill; Bantam Software; Batteries Included; Better Working Software; CBS Software; Davidson & Associates, Inc.; Electronic Arts; Epyx; Fisher-Price; Gamestar; Hayden Software; Infocom; Microprose; Microsoft Corp.; Mindscape Software; Random House; Scholastic Software; Sierra On-Line; Simon & Schuster; Spinnaker; Springboard; Strategic Simulations Inc.; subLOGIC; Telarium; and Windham Classics (ten winning families in this category).

SIXTH PRIZE

SEIKO PC DATAGRAPH MODEL RC-1000,
a multifunction quartz wrist terminal which stores up to 2K of data. Required software and cables included; retails for $150.

HOW TO ENTER

We're proud to announce our second annual nationwide search for the "Computing Family of the Year." Yours could be one of the winning families featured in the pages of FAMILY COMPUTING. You could win a computer, monitor, or any other of the valuable hardware or software prizes that can increase your whole family's computing enjoyment.

WHO'S ELIGIBLE

Any family that uses its computer in especially efficient, rewarding, and/or creative ways! Enter your own family, or perhaps that of a friend or a favorite teacher whose ability and versatility in computing you admire. Write and tell us why you nominate them as our "Computing Family of the Year."

HOW TO WRITE YOUR ENTRY

Answer the following questions. You can number the paragraphs if you'd like, but it's not mandatory.

1. When and why did the family decide to buy a computer? What kind of computer did the family purchase?
2. How does each family member use the computer? Include names and ages.
3. Do the children use a computer in school? Is the computer at home used for educational purposes? If so, how?
4. How does the family use the computer together?
5. Which are the most efficient, rewarding, and/or creative ways the family uses its computer? If software is used, tell us the kinds.
6. In what ways has the computer changed family members or the way they live?
7. Has the computer lived up to original expectations? Has the computer's use evolved with time?

Also, we'd love to see a family photo—of the family computing, of course. (A casual snapshot will do.)

CONTEST RULES

1. Your entry should run no more than 2,000 words, or about eight double-spaced, typewritten pages.
2. Scholastic Inc. employees, advisory board members, and members of their families are not eligible.
3. Previous winners of the "Computing Family of the Year Contest" are ineligible.
4. All entries and photographs become the property of Scholastic Inc., which reserves the right to use them in publications and promotions. Unfortunately, Scholastic Inc. will not be able to acknowledge your entries. Entries and photographs will not be returned.
5. Include your address and phone number (or, if you are nominating another family, include its address and phone number).
6. No cash substitutions for prizes.

Deadline: All entries must be postmarked by March 31, 1986.
Judges: Entries will be judged by a panel of Scholastic employees. Judges' decisions are final.
Winners: The winners will be announced in the September 1986 issue of FAMILY COMPUTING.

FAMILY COMPUTING

Nominating letters should be mailed to: Suzette Harvey, Computing Family of The Year Contest, c/o FAMILY COMPUTING, Scholastic Inc., 730 Broadway, New York, NY 10003.

The Programmer

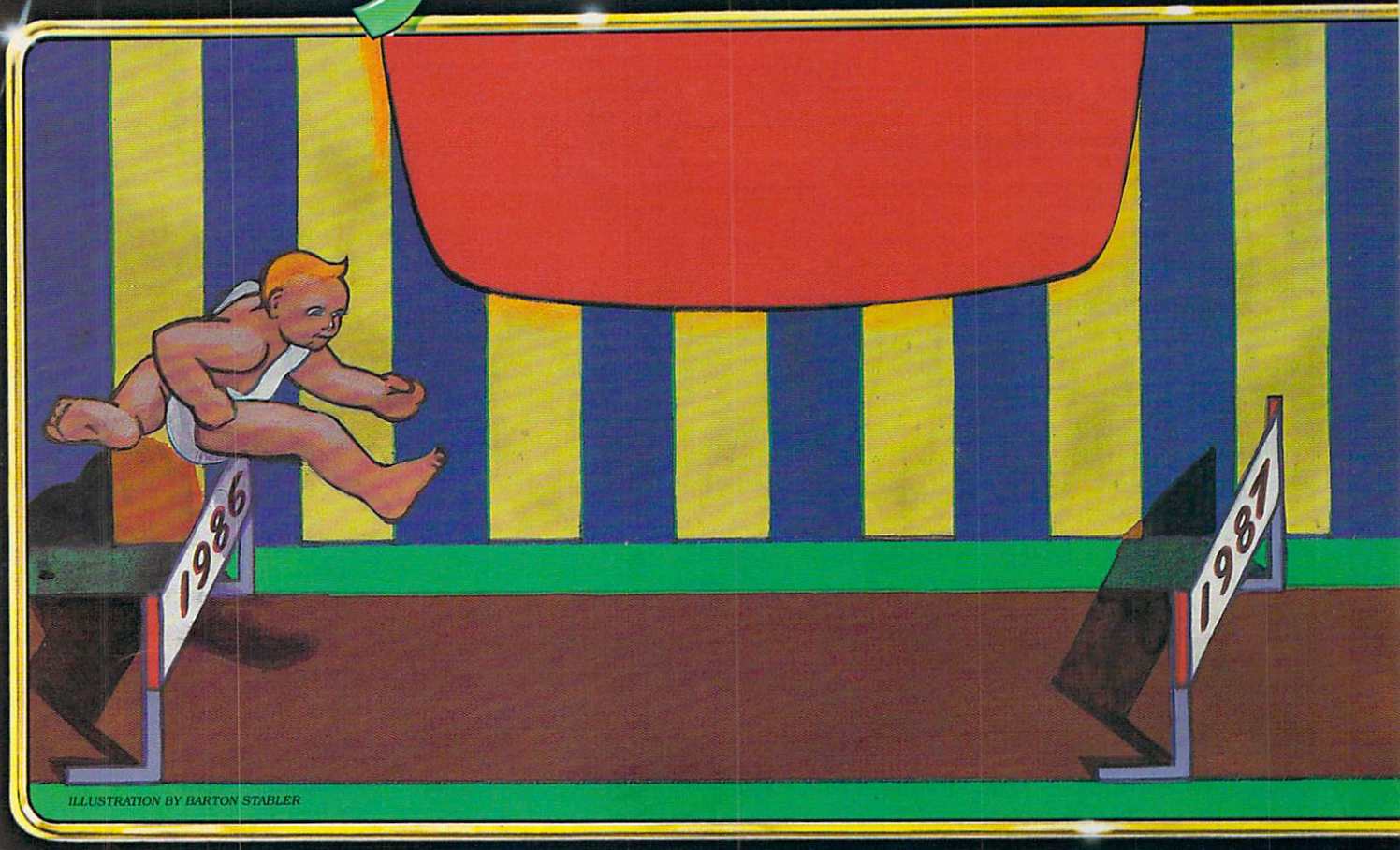


ILLUSTRATION BY BARTON STABLER

★ JANUARY ★

TIPS TO THE TYPIST
Page 56

PROGRAMMING P.S.
Page 70

MORE PROGRAMS IN K-POWER
Page 84

PRESCHOOL PROGRAM
Page 57

Try *Baby Box*, to give your young child a real computer experience!

ARCADE GAME
Page 60

Can you beat the times shown and win a gold medal? You're the champion with this crowd-pleasing, fast-action sports game!

PRODUCTIVITY PROGRAM
Page 70

Our own versatile filebox program, *Home Information Manager*, is presented here for the IBM PC and PCjr.

ILLUSTRATION BY JIM CHERRY III

TIPS TO THE TYPIST

Typing in FAMILY COMPUTING'S programs is a great way to become familiar with your computer and get some free software "to boot." But it's frustrating to type in a long program only to find it doesn't work as it should. When this happens, simple typing errors are most often the cause. So to help you gain greatest value from the time you spend computing with us, we've put together some tips on how to avoid typing errors—and what to do if a program doesn't run right. Read them carefully and you'll be up and running in no time!

SOME GENERAL RULES

1. Do read instructions and program headings carefully. Make sure your computer has enough memory, the right version of BASIC, and the appropriate peripherals (joysticks, printers, disk drives, etc.) for a program.

2. Don't let fatigue and boredom contribute to inaccuracy. If you're new to programming, try typing in shorter programs first. Type in a longer program in easy stages, SAVEing each installment as you go.

3. Until you are fairly familiar with BASIC, **do** assume that every word, number, letter, space, and punctuation mark in a program listing must be copied accurately if the program is to function as intended.

4. Do watch out for potential trouble spots. About 90 percent of all typing errors occur in DATA statements: long lines filled with numbers or incomprehensible secret codes. If possible, have someone else read DATA to you as you type, and help you proofread it if you have trouble later on. Proofreading from a printout is best.

5. Do be aware that program listings printed in FAMILY COMPUTING sometimes differ from what you will see on your computer's screen or in printouts you produce at home. Our program listings are printed 54 characters wide. Thus, a single BASIC program "line" (sometimes called a "logical line") may appear as several lines in our listing. If you are typing along and reach the right margin of the printed listing, don't press RETURN or ENTER until you've checked to see if the program "line" you're typing really ends there. The way to tell is to check if the line following begins with a multiple of 10 that follows in sequence from the previous logical line. REM statements are the exception and typing them in is optional.

Several computers (ADAM, Apple, Atari, and TI) format BASIC programs according to unique rules of their own. Don't let this throw you—just type in the listing exactly as printed in the magazine and your computer is guaranteed to accept it, even though it may end up looking a little different on your screen.

6. One foolproof way to correct an error in a BASIC program line is to type the line in again from the beginning, and press RETURN or ENTER to set it in place of the old one in your computer's memory.

WHICH PROGRAMS WILL RUN ON MY COMPUTER?

Unless a program heading indicates otherwise, programs will run on any version of the computer specified, with the following exceptions:

- Apple programs run under Applesoft (*not* Integer) BASIC on the Apple II (with language card), II plus, IIe, and IIc.
- IBM compatibility of BASIC programs is determined by both the hardware and the version of BASIC used. Our programs for IBM PC & compatibles are composed on IBM PC & PC*jr*s, and tested under most versions of BASIC available for these machines. They are then tested on a variety of IBM-compatible machines under the versions of BASIC supplied with them. Each "IBM PC & compatibles" program listing is supplemented by a rundown of the machines and versions of BASIC under which the program is guaranteed to work. Most programs will probably run on many other PC Compatibles and under other versions of BASIC.
- TI programs not marked "w/TI Extended BASIC" should be run under standard (console) TI BASIC.

DEBUGGING HINTS

Sometimes even the most careful typist makes a mistake. Don't expect your program to run right off the bat. If you have problems, remain patient and follow these general instructions for a probable quick fix.

1. Write down any error messages you receive.

2. If necessary, look these up in your manual, and check the indicated lines for simple mistakes. Also check related lines (see No. 4, below), such as the DATA statements corresponding to a READ routine. Correct all the problems you can find, and SAVE a corrected copy of the program before typing RUN again. If you're lucky, all systems will be GO; if not . . . .

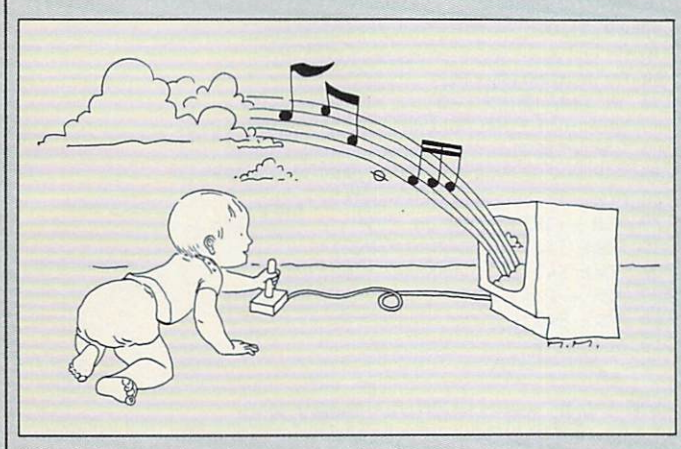
3. LIST the program in screen-size chunks (check your manual for instructions on how to LIST parts of a program). Even better, if you have a printer, get a printout. Compare what you've typed in—letter by letter—to the published program. Make sure that you haven't typed the numeral 0 (which is slashed in our listings) for the letter O (which isn't), swapped a small letter "l" for the numeral one, dropped or mixed up some punctuation, switched uppercase text for lowercase, or vice versa (particularly in DATA statements or within quotes), or miscounted the characters (and/or spaces) between a pair of quotes. Get someone to help you if possible.

4. Check your DATA statements—then check them again. Mistakes in DATA statements are the single most common cause of program failures. Bad data can cause a program to malfunction at any point, which can be misleading. If you can't find your error in the lines the computer specifies, check your DATA statements line by line, letter by letter, comma by comma. Then have someone else check it for you.

5. If all else fails, turn off your computer and relax. Then try again the next day—exhausted proofreaders are careless proofreaders.

BABY BOX

BY JOEY LATIMER



What do you do when you're working on your home computer and your small child comes over to see what you're doing? I always used to wish there were some way I could let my daughter, Erin, play with the machine and get comfortable with it. Unfortunately, though I had access to a huge library of software, there weren't any programs I could find that would appeal to a one-year-old. For a while, Erin and I played with the word-processor, but she was too young for typing and ended up being more interested in the beeping of the keyboard than in literary experiments. Then I tried some arcade games, but she had a hard time understanding how to push the joystick (actually, she preferred chewing on it).

Eventually, however, my wife and I noticed something that solved our problem. Erin's "activity box" had something like a trak ball in it, and when she sat in her infant seat she could spin it with her feet. "Hmmm. . ." we thought. "Let's put a *real* trak ball in front of her, and see if she can spin that." It worked. She could spin it just the same.

Knowing this, I went to the computer and wrote a little program that would change the colors of the screen and play musical notes each time the trak ball was spun.

We call our little program *Baby Box*, and we're happy that FAMILY COMPUTING is sharing it with you.

Because most people don't own trak balls, we've modified the original program so that it works with the keyboard or a joystick. (However, if you *do* own a trak ball and can plug it into your computer's joystick port, it should work, also.) To use the program, type it into your computer, then SAVE it to disk or cassette. Next, if you have a joystick (or trak ball), plug it into port number one. Then type RUN. Seat your child safely in an infant seat, high chair, or on your lap, and give him or her access to the controller or keyboard. Each time the child presses a key or moves the controller (or presses the controller's button), the screen will change colors, and the computer will play a tone, randomly picked from a musical scale.

Remember that young children have very short attention spans—usually less than five minutes. Don't be upset if your child doesn't seem interested at first, or even seems a little afraid. Don't force things. Start with the volume turned down low, and let the baby explore a little. It won't be long before your little one is banging out a colorful tune on the *Baby Box*.

ILLUSTRATION BY MONA MARK

Adam/*Baby Box*

```
10 LOMEM: 29000
20 FOR i = 28000 TO 28012
30 READ a
40 POKE i,a
50 NEXT i
59 REM --SET WHITE TEXT ON BLACK BACKGROUND--
60 POKE 17115,240
70 TEXT
80 PRINT TAB(11);"*-BABY BOX-*"
90 PRINT
100 PRINT TAB(4);"Press the keys or move the"
110 PRINT TAB(12);"joystick."
120 VTAB 20:HTAB 5
130 PRINT "Press any key to start."
140 GET k$
150 HOME
160 x = 0
169 REM --PREPARE FOR KEYPRESS--
170 CALL 28007
179 REM --"PEEK(64885)" TELLS LAST KEY PRESSED--
180 IF PDL(5) <> 0 OR PDL(7) <> 0 OR PDL(9) <> 0 OR PD
L(13) <> 15 OR PEEK(64885) <> 0 THEN 270
190 IF x = 0 THEN 180
200 x = x+1
210 IF x < 50 THEN 180
219 REM --TURN OFF SOUND--
220 POKE 28006,159
230 CALL 28000
240 POKE 17115,240
250 TEXT
260 GOTO 160
270 x = 1
280 back = INT(RND(1)*14)+2
290 fore = back+INT(RND(1)*13)+1
300 IF fore > 15 THEN fore = fore-14
309 REM --SET RANDOM TEXT AND BACKGROUND COLORS--
310 POKE 17115,back+16*fore
320 TEXT
329 REM --PLAY A RANDOM NOTE--
330 POKE 28006,130+INT(RND(0)*10)
340 CALL 28000
350 POKE 28006,20+INT(RND(0)*50)
360 CALL 28000
370 POKE 28006,144
380 CALL 28000
390 GOTO 170
1000 DATA 58,102,109,211,255,201,0,62,0,50,117,253,201
```

Apple II series/*Baby Box*

```
10 FOR S = 768 TO 796
20 READ A
30 POKE S,A
40 NEXT S
49 REM --PREPARE FOR KEYPRESS--
50 POKE -16368,0
60 P0 = PDL(0)
70 P1 = PDL(1)
80 HGR
90 PRINT TAB(15);"*-BABY BOX-*"
100 PRINT
110 PRINT TAB(3);"PRESS THE KEYS OR MOVE THE JOYSTICK.
"
120 PITCH = 0
129 REM -- -16286 IS TRIGGER, -16384 KEYBOARD STATUS--
130 IF ABS(PDL(0)-P0) > 2 OR ABS(PDL(1)-P1) > 2 OR PEE
K(-16286) > 127 OR PEEK(-16384) > 127 THEN 220
140 IF PITCH = 0 THEN 130
149 REM --PLAY A LONG NOTE--
150 POKE 6,200
160 POKE 8,PITCH
170 CALL 768
180 HCOLOR= 0
```

```
189 REM --SET GRAPHICS SCREEN TO CURRENT HCOLOR--
190 HPLOT 1,1
200 CALL 62454
210 GOTO 120
220 PØ = PDL(Ø)
230 P1 = PDL(1)
240 POKE -16368,Ø
250 FOR D = 1 TO 150
260 NEXT D
270 HCOLOR= INT(RND(1)*8)
280 HPLOT 1,1
290 CALL 62454
300 PITCH = RND(1)*200+50
310 POKE 6,10
320 POKE 8,PITCH
330 CALL 768
340 GOTO 130
1000 DATA 165,8,74,133,10,164,8,173,48,192,136,234
1010 DATA 234,208,251,165,7,56,229,10,133,7,176,237
1020 DATA 198,6,208,233,96
```

Atari 400, 800, 600/800XL, & 130XE/*Baby Box*

```
10 GRAPHICS 2+16
20 PRINT #6;"   *-BABY BOX-*"
30 PRINT #6
40 PRINT #6;" PRESS THE KEYS OR"
50 PRINT #6;" MOVE THE JOYSTICK."
60 X=Ø
69 REM --"PEEK(764)" TELLS LAST KEY PRESSED--
70 IF STICK(Ø)<>15 OR STRIG(Ø)=Ø OR PEEK(764)<>255 THE
N 150
80 IF X=Ø THEN 70
90 X=X+1
100 IF X<65 THEN 70
110 SOUND Ø,Ø,Ø,Ø
119 REM --RETURN TEXT COLOR TO YELLOW--
120 POKE 708,25
130 SETCOLOR 4,Ø,Ø
140 GOTO 60
150 X=1
159 REM --PREPARE FOR ANOTHER KEYPRESS--
160 POKE 764,255
169 REM --SET TEXT TO RANDOM COLOR--
170 POKE 708,INT(RND(1)*16)*16+4
180 SETCOLOR 4,INT(RND(1)*16),6
190 SOUND Ø,52+INT(RND(1)*12)*9,10,6
200 GOTO 70
```

Commodore 64 & 128 (C 64 mode)/*Baby Box*

```
9 REM --TURN ON KEY REPEAT--
10 POKE 650,128
20 S=54272
30 FOR I=Ø TO 23
40 POKE S+I,Ø
50 NEXT I
60 PRINT CHR$(147)
70 PRINT TAB(14);"*-BABY BOX-*"
80 PRINT
90 PRINT TAB(2);"PRESS THE KEYS OR MOVE THE JOYSTICK."
99 REM --TURN ON VOLUME--
100 POKE 54296,15
109 REM --SET ATTACK/DECAY/SUSTAIN/RELEASE--
110 POKE 54277,100
120 POKE 54278,100
130 X=Ø
140 GET K$
149 REM --PEEK(56321) GIVES JOYSTICK, TRIGGER STATUS--
150 IF (PEEK(56321) AND 15)<>15 OR (PEEK(56321) AND 16
)<>16 OR K$<>"" THEN 230
160 IF X=Ø THEN 140
170 X=X+1
180 IF X<40 THEN 140
189 REM --TURN OFF SOUND--
190 POKE 54276,Ø
199 REM --RETURN SCREEN COLOR TO BLUE--
200 POKE 53281,6
209 REM --RETURN BORDER COLOR TO LIGHT BLUE--
210 POKE 53280,14
220 GOTO 130
230 X=1
240 C=INT(RND(Ø)*16)
250 IF C=14 THEN 220
259 REM --SET BACKGROUND TO A RANDOM COLOR--
260 POKE 53281,C
269 REM --SET BORDER TO A RANDOM COLOR--
270 POKE 53280,INT(RND(Ø)*16)
279 REM --SET A RANDOM NOTE (2 POKES)--
280 POKE 54273,INT(RND(Ø)*22)+1
290 POKE 54272,INT(RND(Ø)*200)+20
299 REM --PLAY NOTE--
300 POKE 54276,17
310 GOTO 140
```

IBM PC & compatibles*/*Baby Box*

```
10 DEF SEG=Ø
20 SCREEN 1,1
30 WIDTH 40
40 KEY OFF
50 STRIG ON
60 CLS
70 SØ=STICK(Ø)
80 S1=STICK(1)
90 LOCATE 4,14:PRINT "*-BABY BOX-*"
100 LOCATE 8,2:PRINT "PRESS THE KEYS OR MOVE THE JOYST
ICK."
110 PITCH=Ø
120 IF ABS(STICK(Ø)-SØ)>2 OR ABS(STICK(1)-S1)>2 OR STR
IG(1)<>Ø OR INKEY$<>"" THEN 170
130 IF PITCH=Ø THEN 120
140 SOUND PITCH,20
150 COLOR Ø,1
160 GOTO 110
169 REM --CLEAR KEYBOARD BUFFER--
170 POKE 1050,PEEK(1052)
180 FOR D=1 TO 200
190 NEXT D
200 SØ=STICK(Ø)
210 S1=STICK(1)
220 COLOR INT(RND*3)+1,INT(RND*2)+1
230 PITCH=RND*1800+150
240 SOUND PITCH,2
250 GOTO 120
```

**This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter, w/Disk BASIC D2.00 or Advanced BASIC A2.00. IBM PCjr, w/Cassette BASIC C1.20 or Cartridge BASIC J1.00. Tandy 1000, w/GW-BASIC 2.02 version 00.05.00. Tandy requires joystick (left port).*

Macintosh w/Microsoft BASIC 2.0*/*Baby Box*

```
REM --SET UP SCREEN; FIND MOUSE--
  CLS
  MX=MOUSE(1)
  MY=MOUSE(2)
  WINDOW 4,"INSTRUCTIONS",(2,315)-(508,337),1
  PRINT TAB(12);"Press the keys or move the mouse to
play a note.";
  WINDOW 1,"BABY BOX",(2,40)-(508,295),1
  WINDOW OUTPUT 1
NOSOUND:
  PITCH=Ø
KEYPRESS:
  KEY=(INKEY$<>"")
  BUTN=(MOUSE(Ø)<Ø)
  MOV=((MOUSE(1)<>MX) OR (MOUSE(2)<>MY))
  IF KEY OR BUTN OR MOV THEN DRAWCIRCLE
  IF PITCH=Ø THEN KEYPRESS
REM --PLAY A LONG NOTE--
  SOUND PITCH,10
  FOR D=1 TO 500
```

```
  NEXT D
  CLS
  GOTO NOSOUND
DRAWCIRCLE:
  MX=MOUSE(1)
  MY=MOUSE(2)
  X=INT(491*RND)
  Y=INT(251*RND)
  R=INT(35*RND)+5
  CIRCLE (X,Y),R
REM --PLAY A SHORT NOTE--
  FOR D=1 TO 100
  NEXT D
  PITCH=INT(1000*RND)+50
  SOUND PITCH,1
  GOTO KEYPRESS
```

**Because the Macintosh doesn't have colors, this version uses graphics.*

Tandy Color Computer/*Baby Box*

```
10 CLS
20 J0=JOYSTK(0)
30 J1=JOYSTK(1)
40 PRINT@138,"*-BABY BOX-*"
50 PRINT@259,"PRESS THE KEYS OR MOVE THE"
60 PRINT@299,"JOYSTICK."
70 PRINT@356,"PRESS ANY KEY TO BEGIN."
80 IF INKEY$="" THEN 80
90 CLS
100 PMODE 3,1
110 PCLS
120 SCREEN 1,0
130 PITCH=0
139 REM --PEEK(65280)=254 IF TRIGGER IS PRESSED--
140 IF ABS(JOYSTK(0)-J0)>2 OR ABS(JOYSTK(1)-J1)>2 OR P
EEK(65280)=254 OR INKEY$<>"" THEN 190
150 IF PITCH=0 THEN 140
160 SOUND PITCH,25
170 PCLS(1)
180 GOTO 130
190 J0=JOYSTK(0)
200 J1=JOYSTK(1)
210 PCLS(INT(RND(0)*4))
220 PITCH=RND(0)*200+50
230 SOUND PITCH,5
240 GOTO 140
```

Tandy Model 4 */*Baby Box*

```
9 REM --TO STOP PROGRAM, PRESS <CLEAR>-<COMMA>--
10 ON ERROR GOTO 390
20 DIM RC(18)
30 RANDOM
40 SYSTEM "SYSTEM (BREAK=OFF)"
50 CLS
60 PRINT CHR$(15);CHR$(21)
70 FOR X=1 TO 18
80 READ RC(X)
90 NEXT X
100 PRINT TAB(33);"*-BABY BOX-*"
110 PRINT@671,"PRESS THE KEYS."
120 K$=INKEY$
130 IF K$="" THEN 120
140 CLS
150 IF K$=CHR$(91) THEN 410
160 A=RND(19)-1
170 B=RND(60)-1
180 W=RND(19)+1
190 H=RND(3)+1
200 C=RC(RND(18))
210 PRINT@(A,B),STRING$(W,C)
220 FOR X=1 TO H
230 PRINT@(A+X,B),CHR$(C);SPC(W-2);CHR$(C)
240 NEXT X
250 PRINT@(A+H,B),STRING$(W,C)
260 FOR X=1 TO 5
270 PITCH=RND(8)-1
```

→

CIRCLE READER SERVICE 5

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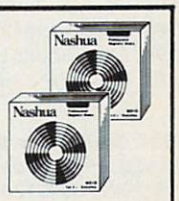

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CIRCLE READER SERVICE 56

```
280 SOUND PITCH,0
290 NEXT X
300 FOR D=1 TO 10
310 NEXT D
320 CLS
330 K$=INKEY$
340 IF K$<>"" THEN 150
350 IF PITCH=0 THEN 330
360 SOUND PITCH,3
370 PITCH=0
380 GOTO 330
390 CLS
400 PRINT "YOU'VE MADE A TYPING ERROR; PLEASE CHECK YO
UR PROGRAM."
410 PRINT CHR$(14);CHR$(21)
420 SYSTEM "SYSTEM (BREAK=ON)"
430 END
1000 DATA 192,193,194,195,196,197,200,210,220
1010 DATA 228,229,234,235,236,238,252,253,254
```

*Because the Tandy Model 4 doesn't have colors, this version uses graphics.

TI-99/4A/*Baby Box*

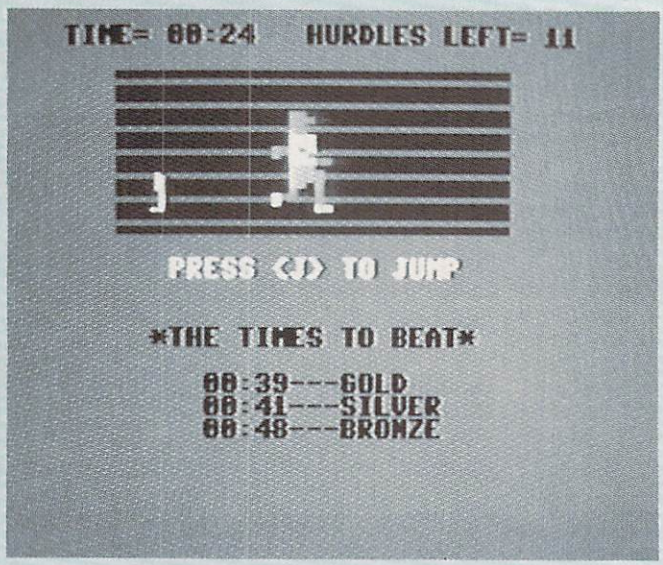
```
9 REM --BE SURE <ALPHA LOCK> KEY IS UP--
10 CALL CLEAR
20 PRINT TAB(9);"*-BABY BOX-*"
30 PRINT
40 PRINT " PRESS THE KEYS OR MOVE THE"
50 PRINT TAB(11);"JOYSTICK."
60 PITCH=0
70 CALL KEY(3,K,S)
80 CALL JOYST(1,X1,Y1)
90 CALL KEY(1,K,F)
100 IF (X1<>0)+(Y1<>0)+(S<>0)+(F<>0)THEN 150
110 IF PITCH=0 THEN 70
120 CALL SOUND(1000,PITCH,0)
130 CALL SCREEN(4)
140 GOTO 60
150 CALL SCREEN(INT(RND*14)+3)
160 FOR D=1 TO 40
170 NEXT D
180 PITCH=RND*2000+200
190 CALL SOUND(2,PITCH,0)
200 GOTO 70
```

VIC-20/*Baby Box*

```
9 REM --TURN ON KEY REPEAT--
10 POKE 650,128
19 REM --TURN ON VOLUME--
20 POKE 36878,15
30 PRINT CHR$(147);TAB(5);"*-BABY BOX-*"
40 PRINT
50 PRINT "PRESS THE KEYS OR MOVE";
60 PRINT TAB(26);"THE JOYSTICK."
70 X=0
80 GET K$
89 REM --PREPARE TO READ JOYSTICK: TURN OFF KEYBOARD--
90 POKE 37154,127
99 REM --PEEK(37137), PEEK(37152) READ JOYSTICK--
100 JS=(PEEK(37137) AND 28)/4+(PEEK(37152) AND 128)/16
109 REM --TURN KEYBOARD BACK ON--
110 POKE 37154,255
120 IF JS<>15 OR (PEEK(37137) AND 32)=0 OR K$<>"" THEN
 190
130 IF X=0 THEN 70
140 X=X+1
150 IF X<20 THEN 80
159 REM --RETURN SCREEN AND BORDER TO NORMAL COLORS--
160 POKE 36879,27
169 REM --TURN SOUND OFF--
170 POKE 36876,0
180 GOTO 70
190 X=1
200 C=INT(RND(0)*16)
210 IF C=6 THEN 200
220 POKE 36879,8+16*C+INT(RND(0)*8)
230 POKE 36876,128+RND(0)*100
240 GOTO 80
```


HAPPY HURDLER

BY JOEY LATIMER



In the suburban neighborhood where I grew up, it was quite common to see hedges growing along the walkways in front of houses. Running around the corner to my best friend's house meant traversing seven lawns, eight driveways, three walkways, and six hedges. We turned it into a game—my friend and I—racing from one house to the other. Since we were about even at running on flat ground, the key to winning a race was to be the best at jumping over the hedges, bicycles, hoses, and other front-yard obstacles that were in our way. A missed hedge would not only slow you down, but it could produce some nice scrapes and bruises, too.

To mentally prepare myself for races with my friend, I used to imagine that I was a champion hurdler. I hoped that some day a great Olympic coach would drive down the street, see me in my glory, and take me away to foreign competitions. Ha. Like so many dreams I had as a child, this one, too, slowly faded away . . . until now.

In an attempt to fulfill my long-time desire for gold medals, I've put together a game called *Happy Hurdler*. The object of the game is simple—jump over hurdles by pressing the "J" key. Beat the times shown on the screen and you'll win a medal: gold, silver, or bronze. Tripping over a hurdle will cost you valuable time, so be careful! Fortunately, since *Happy Hurdler* is just a computer simulation, you won't receive any serious injuries if you fall . . . unless, of course, you get mad and kick the table!

Apple II series/*Happy Hurdler*

```
10 POKE 232,252:POKE 233,29
20 POKE 115,252:POKE 116,29
30 DIM CM$(4),AW$(3),MD(3)
40 ST = 7676:S = -16336:MD(1) = 73:PZ = 1000
50 T$ = "  TIME:":H$ = "HURDLES LEFT:"
60 FOR I = 0 TO 87:READ SH:POKE I+ST,SH:NEXT I
70 FOR I = 1 TO 4:READ CM$(I):NEXT I
80 FOR I = 1 TO 3:READ AW$(I):NEXT I
90 FOR I = 2 TO 3:MD(I) = MD(I-1)+2+INT(RND(1)*2)
100 NEXT I
110 TEXT:HOME:PRINT "WELCOME, CONTESTANT."
120 INPUT "WHAT'S YOUR NAME?";N$
130 IF LEN(N$) > 10 THEN N$ = LEFT$(N$,10)
```

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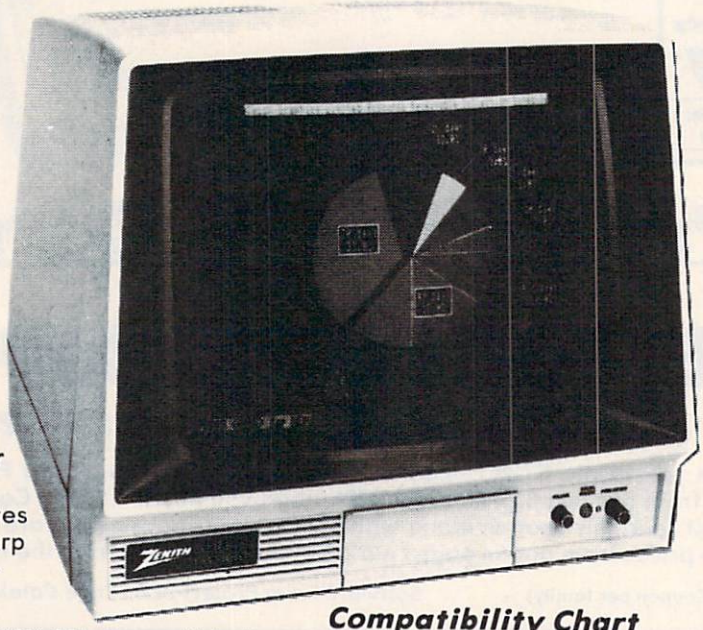

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Apple III	RGB
IBM PC	RGB
Commodore 128	RGB/Composite
Commodore 64	Composite
Commodore Vic-20	Composite
TI 99/4	Composite
Atari 800	Composite
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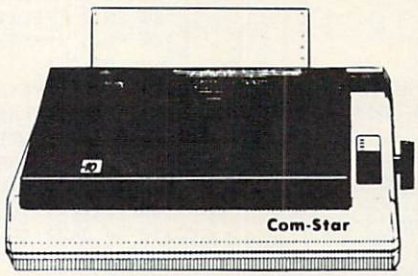

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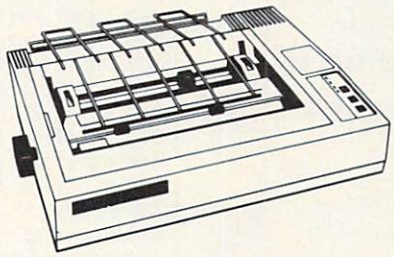

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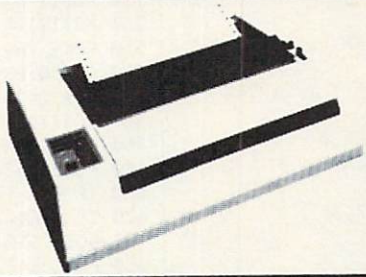

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```
140 HOME:HGR:HCOLOR= 3:SCALE= 4:ROT= Ø:VTAB 21
150 PRINT TAB(5);"PRESS <S> TO START; <J> TO JUMP."
160 PRINT TAB(11);"*THE TIMES TO BEAT*"
170 PRINT "  ";MD(1);" = GOLD    ";MD(2);" = SILVER    "
;MD(3);" = BRONZE"
180 IF PZ = 1000 THEN 200
190 PRINT TAB(11-LEN(N$)/2);N$;"'S PERSONAL BEST: ";PZ
;
200 HPLOT 59,40 TO 219,40 TO 219,100
210 HPLOT TO 59,100 TO 59,40
220 HCOLOR= 3:DRAW 3 AT 130,70
230 POKE -16368,0
240 K = PEEK(-16384):IF K <> 211 AND K <> 243 THEN 240
250 POKE -16368,0
260 HCOLOR= 4:DRAW 3 AT X,Y
270 HOME:VTAB 21
280 PRINT TAB(8);"HURDLES LEFT:";TAB(27);"TIME: Ø"
290 PRINT:PRINT TAB(12);"PRESS <J> TO JUMP."
300 POKE -16368,0
310 DL = 5:PA = 215:PB = 215:HA = 5:HB = 5:JA = 1
320 JB = 3:KD = Ø:C = Ø:HK = Ø:SC = Ø:TC = Ø
330 FOR I = 15 TO Ø STEP -1
340 VTAB 21:HTAB 22:PRINT I;" "
350 IF TC < 9 THEN TC = TC+1:GOTO 370
360 TC = Ø:SC = SC+1:VTAB 21:HTAB 33:PRINT SC
370 IF C > 1 THEN 440
380 IF C = 1 THEN JA = 1:GOTO 400
390 IF PEEK(-16384) = 202 OR PEEK(-16384) = 234 THEN P
OKE -16368,Ø:C = 8:JA = 4
400 HCOLOR= 4:DRAW JB AT 130,70
410 HCOLOR= 3:DRAW JA AT 130,70
420 JB = JA:JA = JA+1-3*(JA = 3)
430 IF JA < 3 THEN A = PEEK(S):A = PEEK(S)
440 IF C > Ø THEN C = C-1
450 FOR DE = 1 TO 5+20*KD+10*(DL > Ø):NEXT DE
460 IF DL > Ø THEN DL = DL-1:GOTO 350
470 HCOLOR= 4:DRAW HB AT PB,98
480 PA = PA-3-INT(RND(1)*2):IF PA <= 63 THEN 520
490 IF NOT KD AND PA < 200 AND PA > 60 AND PEEK(234) <
> 4 THEN KD = 1:IF KD THEN HA = 6:HK = HK+1:SC = SC+IN
T(RND(1)*4)+1
500 HCOLOR= 3:DRAW HA AT PA,98
510 PB = PA:HB = HA:GOTO 350
520 HA = 5:KD = Ø:PA = 215:NEXT I
530 TEXT:HOME:C = 1:FOR I = 1 TO 3
540 IF SC > MD(I) THEN C = C+1
550 NEXT I:CG$ = CM$(C)
560 IF C < 4 THEN MD$ = AW$(C):MD(C) = SC
570 PRINT "WELL, ";N$;", HERE ARE THE RESULTS."
580 PRINT:PRINT "ALL AROUND, IT WAS A ";CG$
590 PRINT "RUN. YOU KNOCKED DOWN ";HK
600 PRINT "HURDLE(S), WITH A TOTAL TIME OF ";SC
610 PRINT "SECONDS.":PRINT:IF SC > PZ THEN 630
620 PZ = SC:PRINT "THAT'S A NEW PERSONAL BEST!":PRINT
630 IF C = 4 THEN 650
640 PRINT "YOU WIN A ";MD$;" MEDAL!"
650 PRINT:PRINT "PRESS <Q> TO QUIT, OR ANY OTHER"
660 PRINT "KEY TO RUN AGAIN.";
670 GET K$:IF K$ <> "Q" AND ASC(K$) <> 113 THEN 140
680 END
1000 DATA 6,Ø,14,Ø,31,Ø,47,Ø,62,Ø,80,Ø,84,Ø
1010 DATA 37,55,54,54,45,62,158,219,44,44,44
1020 DATA 28,35,45,45,4,Ø
1030 DATA 37,55,54,54,45,54,230,59,47,37,36
1040 DATA 220,44,45,37,Ø
1050 DATA 37,55,62,38,45,46,39,55,54,62
1060 DATA 55,44,53,46,Ø
1070 DATA 36,37,55,62,63,45,45,45,63,55,54
1080 DATA 63,55,44,45,45,37,Ø
1090 DATA 47,36,4,Ø
1100 DATA 52,45,45,Ø
2000 DATA NEAR PERFECT,GREAT,GOOD,FAIR
2010 DATA GOLD,SILVER,BRONZE
```

Atari 400, 800, 600XL, 800XL, & 130XE w/48K RAM/*Happy Hurdler*

```
10 POKE 106,PEEK(106)-17:GRAPHICS Ø
20 POKE 106,PEEK(106)+17:PRINT CHR$(125)
30 POKE 106,PEEK(106)-17
40 DIM PM(5),MD(3),B$(20),F$(20),N$(9)
50 DIM MD$(6),CG$(12),AW$(16),CM$(25),SP(4,4)
60 PB=1000:MD(1)=80
70 SETCOLOR 1,Ø,15:SETCOLOR 2,Ø,Ø
80 FOR I=2 TO 3:MD(I)=MD(I-1)+2+INT(RND(Ø)*2)
90 NEXT I
100 F$=CHR$(160):F$(20)=F$:F$(2)=F$
110 B$=CHR$(32):B$(20)=B$:B$(2)=B$
120 PM(1)=PEEK(106)+1:PM(2)=PM(1)+4:PM(3)=PM(2)+4
130 PM(5)=PM(3)+4:PM(4)=PM(2)
140 FOR I=1 TO 3:Q=PM(I)*256+542:FOR J=Q TO Q+23
150 READ A:POKE J,A:NEXT J:NEXT I
160 Q=PM(5)*256+542:FOR I=Q TO Q+13
170 READ A:POKE I,A:NEXT I
180 Q=PM(1)*256:FOR I=1 TO 3:READ OF,NB
190 FOR J=OF TO OF+NB:READ A
200 FOR K=Q TO Q+3072 STEP 1024
210 IF I<>1 OR K<>Q+3072 OR J<OF+7 THEN POKE K+J,A
220 NEXT K:NEXT J:NEXT I
230 FOR I=1 TO 4:READ CG$:SP(I,1)=LEN(CM$)+1
240 CM$(SP(I,1))=CG$:SP(I,2)=LEN(CM$):NEXT I
250 FOR I=1 TO 3:READ MD$:SP(I,3)=LEN(AW$)+1
260 AW$(SP(I,3))=MD$:SP(I,4)=LEN(AW$):NEXT I
270 POKE 559,46:POKE 53277,3
280 FOR I=Ø TO 2:POKE 53256+I,1:NEXT I
290 FOR I=Ø TO 3:READ A:POKE 704+I,A:NEXT I
300 FOR I=1536 TO 1562:READ A:POKE I,A:NEXT I
310 A=USR(1536)
320 PRINT "WELCOME, CONTESTANT. WHAT'S"
330 PRINT "YOUR NAME";
340 INPUT N$:IF N$="" THEN 320
350 PRINT CHR$(125):POKE 752,1
360 POSITION 11,Ø:PRINT "PRESS <S> TO START."
370 POSITION 10,2:PRINT F$:POSITION 10,10:PRINT F$
380 FOR I=2 TO 10:POSITION 6,I:PRINT F$(1,4)
390 POSITION 30,I:PRINT F$(1,4):NEXT I
400 POSITION 11,14:PRINT "PRESS <J> TO JUMP."
410 POSITION 10,16:PRINT "*THE TIMES TO BEAT*"
420 POSITION 10,17:PRINT "--------------------"
430 POSITION 14,18:PRINT "GOLD:   ";MD(1)
440 POSITION 14,19:PRINT "SILVER: ";MD(2)
450 POSITION 14,20:PRINT "BRONZE: ";MD(3)
460 IF PB=1000 THEN 490
470 POSITION 9-LEN(N$)/2,22
480 PRINT N$;"'S PERSONAL BEST: ";PB
490 POKE 54279,PM(2):POKE 53248,115
500 POKE 53249,115:POKE 623,1:POKE 764,255
510 IF PEEK(764)<>62 THEN 510
520 POSITION 11,Ø:PRINT B$
530 POSITION 2,Ø:PRINT "HURDLES LEFT: ";HL
540 POSITION 30,Ø:PRINT "TIME:"
550 POKE 764,255:POKE 203,Ø:POKE 20,Ø
560 DL=50:PH=160:PJ=1:KD=Ø:C=Ø:HK=Ø
570 FOR I=15 TO Ø STEP -1
580 POSITION 16,Ø:PRINT I;" "
590 POSITION 36,Ø:PRINT PEEK(203)
600 POKE 53278,Ø:IF C>1 THEN 650
610 IF C=1 THEN 630
620 IF PEEK(764)=1 THEN POKE 764,255:C=7:POKE 54279,PM
(5):GOTO 650
630 POKE 54279,PM(PJ)
640 IF PJ=1 OR PJ=3 THEN SOUND Ø,121,8,15:SOUND Ø,Ø,Ø,
Ø
650 FOR DE=1 TO RND(Ø)*3+6*KD+10*(DL>Ø):NEXT DE
660 PJ=PJ+1-4*(PJ=4)
670 POSITION 36,Ø:PRINT PEEK(203)
680 IF C>Ø THEN C=C-1
690 IF DL>Ø THEN DL=DL-1:GOTO 590
700 POKE 53250+KD,PH
710 IF  NOT KD THEN KD=(PEEK(53262)=1):IF KD THEN POKE
 53250,Ø:HK=HK+1:POKE 203,PEEK(203)+2
```

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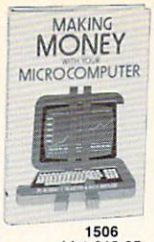
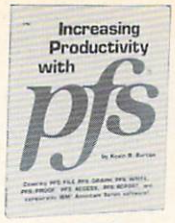


1506
List $13.95



1789P
List $14.95 (paper)

1873
List $21.95

1522
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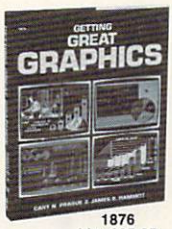

1876
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1720
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2618
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1160
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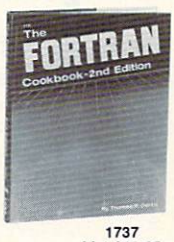

1737
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1945
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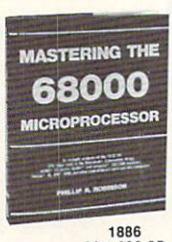

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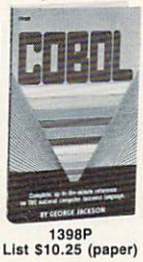

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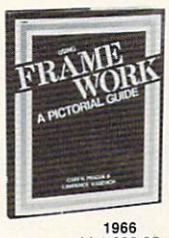

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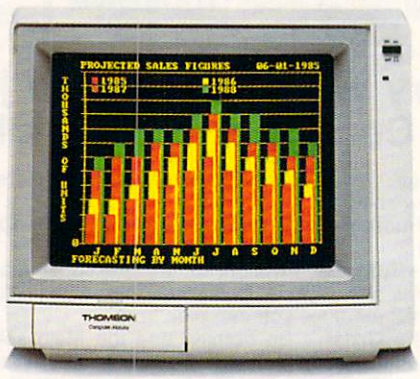

Model CM 31311SI. 12"diagonal, .31mm dot pitch RGBI color monitor with text switch and non-glare tinted screen.

THOMSON

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```
720 PH=PH-2-INT(RND(0)*4):IF PH>75 THEN 590
730 KD=0:PH=160:NEXT I:SC=PEEK(203)
740 POKE 623,4:PRINT CHR$(125)
750 C=1:FOR I=1 TO 3
760 IF SC>MD(I) THEN C=C+1
770 NEXT I:IF C<>4 THEN MD(C)=SC
780 CG$=CM$(SP(C,1),SP(C,2))
790 IF C<4 THEN MD(C)=SC:MD$=AW$(SP(C,3),SP(C,4))
800 PRINT "WELL, ";N$;", HERE ARE THE RESULTS."
810 PRINT :PRINT "ALL AROUND, IT WAS A ";CG$
820 PRINT "RUN. YOU KNOCKED DOWN ";HK
830 PRINT "HURDLE(S), WITH A TOTAL TIME OF ";SC
840 PRINT "SECONDS.":PRINT :IF SC>PB THEN 860
850 PB=SC:PRINT "THAT'S A NEW PERSONAL BEST!":PRINT
860 IF C=4 THEN 880
870 PRINT "YOU WIN A ";MD$;" MEDAL!":PRINT
880 PRINT :PRINT "PRESS <Q> TO QUIT, OR ANY OTHER"
890 PRINT "KEY TO RUN AGAIN.";
900 POKE 764,255
910 IF PEEK(764)=255 THEN 910
920 IF PEEK(764)<>47 THEN 350
930 POKE 53277,0:POKE 623,4:POKE 559,34
940 POKE 106,PEEK(106)+17:GRAPHICS 0
1000 DATA 48,48,56,48,32,0,64,144,144,144
1010 DATA 144,158,128,0,0,0,46,34,34,226
1020 DATA 131,128,128,0
1030 DATA 48,48,56,48,32,0,0,32,32,32
1040 DATA 40,16,8,0,0,0,48,48,48,48
1050 DATA 80,80,80,120
1060 DATA 48,48,56,48,32,0,32,64,128,142
1070 DATA 128,128,128,128,0,28,4,36,36,228
1080 DATA 135,128,128,128
1090 DATA 24,24,28,24,22,32,60,0,1,1
1100 DATA 1,15,224,128
1110 DATA 675,11,48,48,48,48,48,48,48,48,48
1120 DATA 48,48,48,815,6,64,64,64,64,64,64,192
1130 DATA 948,1,64,127
2000 DATA NEAR PERFECT,GREAT,GOOD,FAIR
2010 DATA GOLD,SILVER,BRONZE
3000 DATA 90,255,15,15
4000 DATA 104,162,6,160,11,169,6,32,92,228
4010 DATA 96,216,165,20,201,60,208,6,230,203
4020 DATA 169,0,133,20,76,95,228
```

Commodore 64 & 128 (C 64 mode)/*Happy Hurdler*

```
10 POKE 55,0:POKE 56,62:CLR
20 DIM MD(3),PJ(5),CM$(4),AW$(3)
30 V=53248:S=54272:A=248:PB=1000:MD(1)=87
40 PJ(1)=1:PJ(2)=2:PJ(3)=4:PJ(4)=2:PJ(5)=8
50 POKE V+21,0:POKE 53281,15:POKE 53280,15
60 PRINT CHR$(147);CHR$(144)
70 FOR I=15872 TO 16384:POKE I,0:NEXT I
80 FOR I=0 TO 5:READ OF,BT:K=15872+I*64+OF
90 FOR J=K TO K+BT:READ M:POKE J,M:NEXT J,I
100 FOR I=2040 TO 2045:POKE I,A:A=A+1:NEXT I
110 FOR I=0 TO 11:READ M:POKE V+I,M:NEXT I
120 FOR I=1 TO 6:FOR J=39 TO 44:POKE V+J,10:NEXT J,I
130 POKE V+37,1:POKE V+38,3
140 POKE V+23,15:POKE V+28,63:POKE V+29,15
150 FOR I=S TO S+13:READ M:POKE I,M:NEXT I
160 FOR I=1 TO 4:READ CM$(I):NEXT I
170 FOR I=1 TO 3:READ AW$(I):NEXT I
180 FOR I=2 TO 3:MD(I)=MD(I-1)+2+INT(RND(1)*2):NEXT I
190 T$=CHR$(151)+CHR$(18):ST$=""
200 FOR I=1 TO 23:T$=T$+CHR$(99):NEXT I
210 FOR I=1 TO 20:ST$=ST$+"  ":NEXT I
220 PRINT "WELCOME, CONTESTANT. WHAT'S"
230 INPUT "YOUR NAME";N$:IF N$="" THEN 220
240 IF LEN(N$)>7 THEN N$=LEFT$(N$,7)
250 PRINT CHR$(147);CHR$(158)
260 POKE 53281,12:POKE 53280,3
270 POKE 214,11:PRINT TAB(10);"PRESS <S> TO START";
280 FOR I=2 TO 8:POKE 214,I:PRINT
290 PRINT TAB(7);T$;:NEXT I:PRINT CHR$(5)
300 PRINT TAB(50);"PRESS <J> TO JUMP"
310 PRINT CHR$(144);TAB(89)"*THE TIMES TO BEAT*":PRINT
320 Q=MD(1):GOSUB 1000
330 PRINT TAB(12);"GOLD:   ";M$;":";S$
340 Q=MD(2):GOSUB 1000
```


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CIRCLE READER SERVICE 19

```
350 PRINT TAB(12);"SILVER: ";M$;":";S$
360 Q=MD(3):GOSUB 1000
370 PRINT TAB(12);"BRONZE: ";M$;":";S$
380 IF PB=1000 THEN 410
390 PRINT TAB(8-LEN(N$)/2);N$;"'S PERSONAL BEST: ";
400 Q=PB:GOSUB 1000:PRINT M$;":";S$
410 POKE V+21,2
420 GET K$:IF K$<>"S" THEN 420
430 PRINT CHR$(19);TAB(4);"TIME: ";
440 PRINT TAB(18);"HURDLES LEFT:"
450 DL=20:PH=255:J=1:KD=0:C=0:SC=0:HK=0:TI$="000000"
460 POKE S+24,15:FOR I=15 TO 0 STEP -1
470 PRINT CHR$(19);TAB(31);STR$(I);" "
480 PRINT CHR$(19);TAB(10);MID$(TI$,4,1);":";RIGHT$(TI
$,2)
490 HL=-(DL=0)*(16+16*KD)
500 IF C=1 THEN J=1:GOTO 520
510 GET K$:IF C=0 AND K$="J" THEN C=9:J=5
520 POKE V+21,PJ(J) OR HL
530 FOR DE=1 TO 30*KD-10*(DL>0):NEXT DE
540 IF J=1 OR J=3 AND C=0 THEN POKE S+4,129:POKE S+4,1
28
550 IF C=0 THEN J=J+1+4*(J=4)
560 IF C>0 THEN C=C-1
570 IF DL>0 THEN DL=DL-1:GOTO 480
580 POKE V+8,PH:POKE V+10,PH
590 IF KD=0 AND (PEEK(V+30) AND 16)=16 THEN KD=1:HK=HK
+1
600 PH=PH-4-INT(RND(1)*4):IF PH>80 THEN 480
610 POKE V+8,255:KD=0:PH=255:NEXT I
620 POKE V+21,0:PRINT CHR$(147);
630 POKE 53280,15:POKE 53281,15
640 SC=VAL(RIGHT$(TI$,2))+VAL(MID$(TI$,3,2))*60
650 C=1:FOR I=1 TO 3
660 IF SC>MD(I) THEN C=C+1
670 NEXT I:IF C<4 THEN MD(C)=SC:MD$=AW$(C)
680 CG$=CM$(C)
690 PRINT "WELL, ";N$;", HERE ARE THE RESULTS."
700 PRINT:PRINT "ALL AROUND, IT WAS A ";CG$
710 PRINT "RUN. YOU KNOCKED DOWN";HK
720 PRINT "HURDLE(S), WITH A TOTAL TIME OF"
730 Q=SC:GOSUB 1000:PRINT M$;":";S$;"."
740 PRINT:IF SC>PB THEN 760
750 PB=SC:PRINT "THAT'S A NEW PERSONAL BEST!":PRINT
760 IF C=4 THEN 780
770 PRINT "YOU WIN A ";MD$;" MEDAL!"
780 PRINT:PRINT "PRESS <Q> TO QUIT, OR ANY OTHER"
790 PRINT "KEY TO RUN AGAIN.";
800 GET K$:IF K$="" THEN 800
810 IF K$<>"Q" THEN 250
820 END
1000 MN=INT(Q/60):SE=Q-MN*60:M$=STR$(MN):S$=STR$(SE)
1010 M$=MID$(M$,2,LEN(M$)-1):S$=MID$(S$,2,LEN(S$)-1)
1020 RETURN
2000 DATA 13,49,40,0,0,42,0,0,40,0,0,56,0,0,21
2010 DATA 0,0,21,0,2,153,0,2,22,0,0,21,160
2020 DATA 0,63,0,0,63,128,0,63,128,0,60,128
2030 DATA 0,32,128,1,160,128,1,0,128,0,0,80
2040 DATA 13,49,40,0,0,42,0,0,40,0,0,56,0
2050 DATA 0,21,0,0,21,32,0,169,160,0,149,0,0
2060 DATA 149,0,0,63,0,0,63,0,0,63,0,0,10
2070 DATA 0,0,10,0,0,26,0,0,18,0,0,1,64
2080 DATA 13,47,40,0,0,42,0,0,40,0,0,56,0,0,21,0,0
2090 DATA 21,32,0,154,160,2,21,0,2,21,0,0
2100 DATA 63,0,0,63,160,0,63,160,0,60,64,0,32
2110 DATA 0,0,160,0,2,128,0,1,13,35,40,0
2120 DATA 0,42,0,0,40,0,0,56,0,0,21,0,0,21
2130 DATA 0,10,154,168,0,21,0,0,21,0,0,63,1
2140 DATA 26,191,169,26,191,169,16
2150 DATA 24,36,16,0,0,20,0,0,20,0,0,20
2160 DATA 0,0,20,0,0,20,0,0,4,0,0,4,0,0,4
2170 DATA 0,0,4,0,0,4,0,0,4,0,0,84
2180 DATA 42,20,20,0,0,20,0,0,20,0,0,20,0,0,20
2190 DATA 1,84,21,85,80,21,85,80
3000 DATA 140,80,140,80,140,80,140,72,0,101,0,101
4000 DATA 135,33,0,0,0,17,49,163,7,0,0,0,51,67
5000 DATA NEAR PERFECT,GREAT,GOOD,FAIR
5010 DATA GOLD,SILVER,BRONZE
```


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>WRAP THE TOWEL AROUND MY HEAD

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PROGRAMMING P.S.

Corrections to previous months' programs

Get 'Em *(November 1985, page 66)*

Atari: Please change line 410 to read as follows:

```
410 POSITION 10,0:PRINT S;SP$;SP$;:SOUND 0,X,10,8
```

Super Save *(November 1985, page 90)*

Atari 600/800XL & 130XE: This program works fine on the Atari 400 and 800, but on the 600XL, 800XL, and 130XE it will not handle errors correctly. Below is a version compatible with all Ataris; however, the program we published in November works better on the 400 and 800 than this one does.

```
10 FOR I=1536 TO 1657:READ A:POKE I,A:NEXT I
1000 DATA 104,168,24,42,133,203,186,138,101,203
1010 DATA 133,203,192,5,208,94,104,208,91,104
1020 DATA 240,88,201,7,176,84,10,10,10,10
1030 DATA 170,104,208,76,157,75,3,104,201,4
1040 DATA 240,4,201,8,208,64,157,74,3,104
1050 DATA 157,69,3,104,157,68,3,169,3,157
1060 DATA 66,3,32,86,228,48,45,189,74,3
1070 DATA 9,3,157,66,3,104,157,69,3,104
1080 DATA 157,68,3,104,157,73,3,104,157,72
1090 DATA 3,32,86,228,48,16,169,12,157,66
1100 DATA 3,32,86,228,48,6,160,0,240,2
1110 DATA 160,175,169,0,133,213,132,212,166,203
1120 DATA 154,96
```

To call this version of *Super Save* from Atari BASIC, you still use the expression

```
A=USR(1536,IOCB,OP,ADR("D:FILENAME"),START,BYTES
```

where IOCB (the number of the I/O channel you wish to use) is between 1 and 6; OP is 8 (to save) or 4 (to load); FILENAME is the filename you want to save or load from; START is the address of the beginning of the area of memory you want to save or load; and BYTES is the length of that area.

After executing the above expression, the value of variable "A" will be zero if everything went OK. "A" will equal 175 if you made a mistake in one of *Super Save*'s parameters. Finally, if executing the routine caused a DOS error (for example, if *Super Save* couldn't find the file you asked it to load), "A" will equal the normal BASIC error code for whatever error occurred.

To demonstrate this feature, you can add lines 35 and 65 to the demo program:

```
35 IF A<>0 THEN PRINT "ERROR ";A;" HAS OCCURRED.":STOP
65 IF A<>0 THEN PRINT "ERROR ";A;" HAS OCCURRED.":STOP
```

Wordcount (*December 1985, page 61*)

IBM PC & compatibles w/disk drive: Please change line 120 to read as follows:

```
120 AL=(CH>64 AND CH<91) OR (CH>96 AND CH<123) OR (CH>
47 AND CH<58) OR CH=39
```

Rudolph, the Red-Nosed Reggae (*December 1985, page 84*)

Commodore 64 & 128 (C 64 mode): Please change lines 1000–1010 to read as follows:

```
1000 DATA 0,0,0,0,0,28,100,0,0,0,0,0,28
1010 DATA 100,0,0,0,0,0,28,123,0,0,0,15
```

Then, add line 195:

```
195 POKE S+11,33:POKE S+18,33
```

IBM PC & compatibles: We're sorry, but since this song is arranged for three voices, it will not run on the IBM PC.

HOME INFORMATION MANAGER

Put Your Files on a Floppy Disk with This Mini-Data-Base Program for the IBM PC/PC*jr*

PROGRAM BY STEVEN C.M. CHEN
INTRODUCTION BY LANCE PAAVOLA

Since publishing the Commodore 64 and Apple versions of Home Information Manager, *we've been besieged with requests from readers for translations for other computers. So, this month, we're presenting an IBM version of the program.*

Home Information Manager is an electronic filing program that helps you gather files onto a slim, neat, portable disk, and print out a hard copy whenever you want. Try it if you're not ready to buy a commercial data-base program yet. Maybe you're unsure whether storing your records electronically makes sense, or all you think you'll want to computerize is your 100-name Christmas card list. It may take a while to type in, but when you're finished, it's a program you can use every day. You can pinpoint a particular piece of information without having to thumb through it all. You can make changes without mess. And you can consolidate all your files in one place.

THE FIRST STEPS

Begin by carefully typing in and SAVEing the program. *(See Tips to the Typist, page 56, for help with typing in programs.)* You may also wish to SAVE a second (backup) copy of the program on a separate disk at this time. Before you RUN the program, make sure your printer (if you have one) is connected and turned on.

Don't be discouraged if the program doesn't RUN the first time; with such a long program, you're bound to make typing errors. LIST it on the printer and proofread carefully. When you've got the program running, SAVE the final version and make a backup.

You can save your own data on the same disk as your working copy of *Home Information Manager*. If you prefer to keep your

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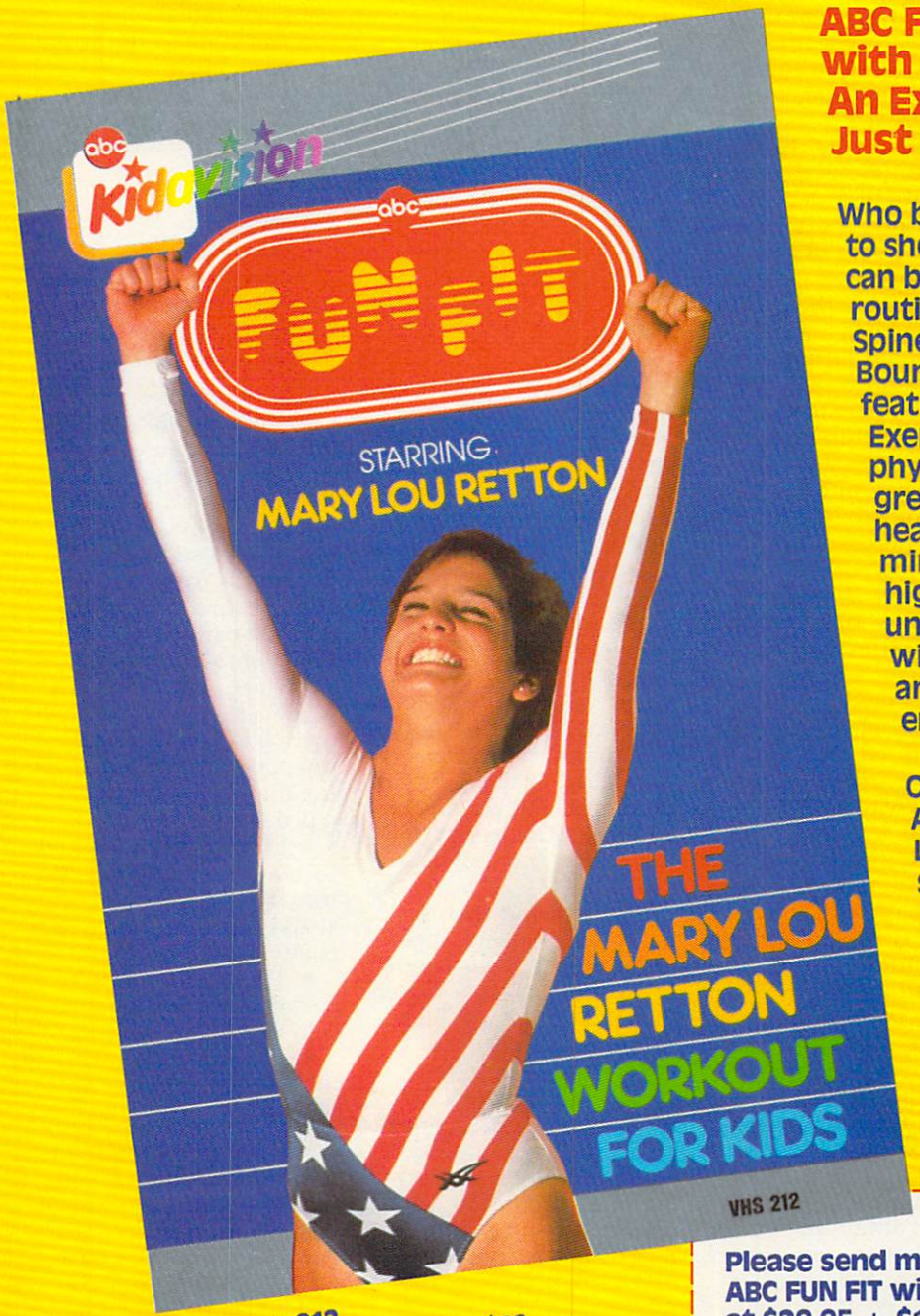

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data on separate disks, get the disks now, format them, and label appropriately (e.g., MOM, DAD, JODY; or FINANCIAL, PERSONAL).

Before you transfer important records to your *Home Information Manager* disks, test the program by creating a few sample fileboxes and filling in some info. When you're confident you've located any remaining typing errors, and have a good idea of how the program operates, you're ready to start using it in earnest.

A COMPUTERIZED FILEBOX

To make *Home Information Manager* easy to learn, we've designed it to work just like a recipe box filled with index cards. You can have as many "fileboxes" as will fit on your disks.

Since you'll usually put different kinds of information on each line of every index card, you should assign a name to each line to remind you of what goes where. For example, for a catalog of your books (or books you've borrowed or lent), you might label the first line AUTHOR; the second, TITLE; the third, PUBLISHER; the fourth, DATE; the fifth, SUBJECT for general subject area; and the sixth, LOCATION for where it's shelved or who borrowed it.

Once you've typed in information about your books (choice two on the menu), you can print out a catalog of your library (choice four); add new books as you acquire them (choice two) and remove ones you've disposed of (choice three); change any entry (e.g., change the LOCATION of a book from DEN to BEDROOM—choice three again); or display or print out the information about a particular book or all the books on a given subject (also choice three).

Choice six lets you store the filebox you're working on (all cards and the card format) on disk; bring a new one into memory from disk; and remove (erase) a filebox. Choice five displays the names of all the fileboxes you've saved on disk.

EASY TO USE

For the most part, it will be obvious how to use the program, and you'll quickly learn how to use even the more obscure features (with a little experimentation). Here are some general principles:

1. *When to press ENTER* (the ↵ key on the IBM PC). When you see a menu and the SELECTION → prompt, or when you're asked for a line number, just press the number key for the option or line you want. You'll go directly there without having to press ENTER . But whenever you're asked to type in something longer than one character—a card number, say, or a line name—the program waits for you to press Enter to indicate you're done.

2. *Moving Back Up Through the Menus.* If you ever get lost in the program, decide you don't want the choice you just made after all, or have finished with an option, you can always press the ESC key. This will take you to the previous menu at any time (except when you're reading from, or writing onto, a disk), even when you're in the middle of typing in a line.

3. *Built-in Editor.* When you see a backwards arrow (←) and a blinking cursor, you are using the built-in editor subprogram. You can then type in and edit a line of text. It will let you make changes in the line until you press ENTER .

You are always in "insert mode"; that is, any character you type will be inserted in the line at the cursor's position. The left and right cursor keys move the cursor within the line; the DEL key deletes the character under the cursor.

A FEW HINTS

Remembering these few key points will make using the program easier:

1. When designing a card format, make sure you allow space for all the lines you might need (up to a maximum of nine). Once you start adding cards to the filebox, you can't add or delete lines without losing all the cards in memory. (You *can* change the names of existing lines, though.)

2. Since there's no SORT function to rearrange your cards in alphabetic or numeric order, you should type in your information in the order you want it to appear. You *can* add a card in the middle, but you have to wait for the computer to shift all the other cards back.

3. When you choose DISPLAY/CHANGE/REMOVE or PRINT and then WORK WITH (or PRINT) SELECTED CARDS, you're given two choices. MATCH FROM BEGINNING OF LINE checks to see if a line *begins* with the characters you've specified. SEARCH WHOLE LINE looks for those characters *everywhere* within a line, but takes much longer. For example, if you tell the program to look for SMITH, SEARCH WHOLE LINE would find both SMITH, JOE and JOE SMITH; MATCH FROM BEGINNING OF LINE would find only SMITH, JOE.

Bear in mind that the program considers uppercase and lowercase letters to be different, so a search for SMITH would not find "Smith" or "smith."

4. When you PRINT a card or cards, they'll be printed with a predefined format (left margin and number of lines skipped between cards). You can change this predefined format by choosing CHANGE PRINTER OPTIONS from the PRINT CARD(S) menu.

5. The number of cards you can add to a filebox is determined by the number of lines in your card format. When you ADD CARD(S), you'll see how many cards you've used and how many more will fit in your current filebox.

6. Remember to back up your disks frequently—certainly after every session in which you enter a lot of information. If you have a printer, it's a good idea to make a printout of everything in your fileboxes occasionally. To be absolutely safe, you can print out each new index card as you add it, then throw out your accumulated hard copies when you do a master printout of the entire file (or when you back up the disk).

MOVING ON

Home Information Manager is powerful, but if you use it often you may find yourself bumping up against some of its limitations:

- You can't do complex multiple searches (e.g., find all the recipes that call for both ham *and* broccoli, but *not* cheese; or all the people who sent you Christmas cards for two of the last three years).
- You can fit only so much onto one index card.
- Once you've set up a card format, you can't add more lines or delete existing ones without losing all the information you've typed in.
- Filebox size is limited by how much info will fit into memory at once, rather than by the storage capacity of your disk.
- The program won't sort your cards alphabetically or numerically.
- The input and printing options are fairly elementary.

If, after using *Home Information Manager*, you discover you need some of these more advanced features, watch future issues of FAMILY COMPUTING for a look at commercial database management programs. To better understand how they work, keep in mind that what we call "fileboxes," commercial programs term "files." They also refer to index cards as "records," and "lines" as "fields."

IBM PC/PC*jr** w/128K RAM & disk drive (printer optional)/*Home Information Manager*

**This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter or Monochrome Display and Parallel Printer Adapter, w/DOS 2.0 or higher and either Disk BASIC D2.00 or Advanced BASIC A2.00. IBM PCjr, w/Cartridge BASIC J1.00.*

```
10 DEF SEG:CLEAR ,&HF000:KEY OFF
20 DIM DM$(3),F$(9),M$(7),MI(8),SM$(20),Y$(2700),YN$(1
),Z$(9)
30 WIDTH "SCRN:",40:SCREEN 0,0:LOCATE ,,0
40 E$=CHR$(27):SP$=CHR$(32):RE$=CHR$(13)
50 CLS:FT=0:RT=0:CD=&HF000
60 YN$(0)="N":YN$(1)="Y":LM=0:SP=1:PF=0:HF=1
70 FOR I=1 TO 7:READ M$(I):NEXT I:TEST$="FILEBOX"
80 MI(0)=1:FOR I=1 TO 7:READ T:MI(I+1)=MI(I)+T
90 FOR J=MI(I) TO MI(I+1)-1:READ SM$(J):NEXT J,I
100 FOR I=0 TO 3:READ DM$(I):NEXT I
110 FOR I=0 TO 71:READ V:POKE CD+I,V:NEXT I
120 L$=SP$+STRING$(38,205)
130 CLS:GOSUB 2500:GOSUB 2600
140 GOSUB 2920:PRINT TAB(8);"HOME INFORMATION MANAGER"
150 GOSUB 2900:PRINT:FOR I=1 TO 6
160 PRINT TAB(5);"<";CHR$(I+48);"> ";M$(I);RE$:NEXT I
170 PRINT:PRINT TAB(9);"SELECTION -->";
180 A$="6":GOSUB 2400:MS=VAL(K$):IF K$=E$ THEN MS=7
190 IF (MS<>3 AND MS<>4) OR RT>0 THEN 210
200 GOSUB 3000:PRINT DM$(3):GOSUB 2200:GOTO 140
210 ON MS GOTO 220,540,850,990,1310,1400,1830
220 FL=30:GOSUB 3100:IF K$=E$ THEN 140
230 A$=MID$(STR$(FT),2):IF SE>2 OR RT<1 THEN 250
240 GOSUB 3010:GOSUB 2700:IF K$=E$ THEN 220 ELSE RT=0
250 GOSUB 3010:IF FT=0 AND SE>1 THEN 420
260 ON SE GOTO 270,350,440,510
270 GOSUB 3200:IF FT<9 THEN 300
280 PRINT "A CARD HAS ONLY 9 LINES!"
290 GOSUB 2200:GOTO 220
300 FT=FT+1:C=FT
310 H$="LINE"+STR$(C)+":":T$=""
320 GOSUB 6000:IF K$=E$ THEN FT=FT-1:GOTO 520
330 F$(FT)=T$:IF FT<9 THEN 270
340 GOSUB 3200:GOTO 290
350 GOSUB 3200:IF FT<1 THEN 420
360 A$=MID$(STR$(FT),2)
370 PRINT "WHICH LINE DO YOU WANT TO DELETE? ";
380 GOSUB 2400:IF K$=E$ THEN 520
390 C=VAL(K$):IF C=FT THEN 410
400 FOR I=C TO FT-1:F$(I)=F$(I+1):NEXT I
410 FT=FT-1:IF FT>0 THEN 350
420 GOSUB 2910:PRINT "NO LINES PRESENT."
430 GOSUB 2200:GOTO 520
440 GOSUB 3200
450 PRINT "CHANGE THE NAME OF WHICH LINE #? ";
460 GOSUB 2400:IF K$=E$ THEN 220
470 PRINT K$:C=VAL(K$)
480 H$="LINE"+STR$(C)+":":T$=F$(C)
490 GOSUB 6000:IF K$=E$ THEN 440
500 F$(C)=T$:GOTO 440
510 GOSUB 3200:GOTO 220
520 IF FT>0 THEN MAX=2700\FT ELSE MAX=0
530 GOTO 220
540 W$=E$:IF FT>0 THEN 570
550 GOSUB 3000:PRINT "YOU MUST ";M$(1);" (OPTION 1"
560 PRINT "ON MAIN MENU) FIRST.":GOSUB 2200:GOTO 140
570 IF RT=MAX THEN GOSUB 3000:GOTO 620
580 GOSUB 3100:IF K$=E$ THEN 140
590 GOSUB 3010:FL=39:IF SE=2 THEN 730
600 GOSUB 2910:RT=RT+1
610 IF RT<MAX+1 THEN 630 ELSE RT=MAX
620 PRINT DM$(2):GOSUB 2200:GOTO 140
630 PRINT TAB(15);"CARD";RT
640 C=RT:FOR L=1 TO FT:GOSUB 3300
650 IF K$<>E$ THEN Y$(T)=T$:GOTO 670
660 L=FT:RT=RT-1
670 NEXT L:IF K$=E$ THEN 580
680 PRINT L$:PRINT DM$(0)
690 LOCATE 21,1:PRINT "CARDS USED:";RT
700 PRINT "CARDS LEFT:";MAX-RT
710 GOSUB 2300:IF K$=SP$ THEN 600 ELSE 140
```


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```
720 GOSUB 3010:IF RT=MAX THEN 620
730 H$="INSERT BEFORE WHICH CARD #?":T$=""
740 FL=35:GOSUB 6000:IF K$=E$ THEN 580
750 GOSUB 3010:C=VAL(T$):IF C>0 AND C<RT+1 THEN 770
760 PRINT DM$(1):GOSUB 2200:GOTO 570
770 PRINT TAB(13);"NEW CARD";C
780 FOR L=1 TO FT:GOSUB 3300
790 IF K$=E$ THEN L=FT ELSE Z$(L)=T$
800 NEXT L:IF K$=E$ THEN 580
810 FOR J=RT*FT TO (C-1)*FT+1 STEP -1
820 Y$(J+FT)=Y$(J):NEXT J:RT=RT+1
830 FOR J=1 TO FT:Y$((C-1)*FT+J)=Z$(J):NEXT J
840 GOTO 720
850 F=-1
860 GOSUB 3100:IF K$=E$ THEN 140
870 IF RT>0 THEN 890
880 GOSUB 2910:PRINT DM$(3):GOSUB 2200:GOTO 140
890 GOSUB 3010:IF SE=2 THEN 980
900 H$="START WITH WHICH CARD?":T$="":FL=33
910 GOSUB 6000:IF K$=E$ THEN 860
920 V=VAL(T$):IF V>0 AND V<RT+1 THEN 940
930 PRINT L$:PRINT DM$(1):GOSUB 2200:GOTO 860
940 GOSUB 3830:J=V
950 W$="":GOSUB 4000:IF W$=E$ THEN 860
960 J=J+1:IF J<RT+1 THEN 950
970 GOSUB 3000:PRINT DM$(2):GOSUB 2200:GOTO 860
980 GOSUB 5000:GOTO 860
990 RA$=" (1-"+MID$(STR$(RT),2)+")?"
1000 FL=7:GOSUB 3100:IF K$=E$ THEN 140
1010 IF RT>0 THEN 1030
1020 GOSUB 2910:PRINT DM$(3):GOSUB 2200:GOTO 140
1030 GOSUB 3010:ON SE GOTO 1040,1070,1120,1130,1140
1040 PRINT "PRINT WHICH CARD #";RA$
1050 GOSUB 3700:IF RF THEN 1000
1060 R1=T:R2=T:GOSUB 3800:GOTO 990
1070 PRINT "START WITH WHICH CARD #";RA$
1080 GOSUB 3700:R1=T:IF RF THEN 1000
1090 PRINT "STOP WITH WHICH CARD #";RA$
1100 GOSUB 3700:R2=T:IF RF OR R2<R1 THEN 1000
1110 GOSUB 3800:GOTO 990
1120 R1=1:R2=RT:GOSUB 3800:GOTO 990
1130 GOSUB 5000:GOTO 990
1140 FL=38:H$="LEFT MARGIN (0-40):"
1150 T$=MID$(STR$(LM),2)
1160 GOSUB 6000:IF K$=E$ THEN 990
1170 LM=VAL(T$)
1180 IF LM<0 OR LM>40 THEN LOCATE CSRLIN-1,1:GOTO 1150
1190 H$="BLANK LINES BETWEEN CARDS (0-66):"
1200 T$=MID$(STR$(SP),2)
1210 GOSUB 6000:IF K$=E$ THEN 990
1220 SP=VAL(T$)
1230 IF SP<0 OR SP>66 THEN LOCATE CSRLIN-1,1:GOTO 1200
1240 H$="PAUSE AFTER EACH CARD (Y/N):":T$=YN$(PF)
1250 GOSUB 6000:IF K$=E$ THEN 990
1260 PF=-(LEFT$(T$,1)="Y")
1270 H$="PRINT LINE NAMES (Y/N):":T$=YN$(HF)
1280 GOSUB 6000:IF K$=E$ THEN 990
1290 HF=-(LEFT$(T$,1)="Y")
1300 PRINT L$:GOSUB 2200:GOTO 990
1310 GOSUB 3100:IF K$=E$ THEN 1380
1320 CLS:GOSUB 2500:GOSUB 3010
1330 ON ERROR GOTO 1360
1340 FILES CHR$(16+ASC(K$))+":*.HIM"
1350 GOSUB 2600:GOSUB 2200:GOTO 1380
1360 PRINT "CHECK DISKS AND DRIVE."
1370 GOSUB 2600:GOSUB 2200:RESUME 1310
1380 ON ERROR GOTO 0:CLS:GOSUB 2500
1390 GOSUB 2600:GOTO 140
1400 FL=31
1410 GOSUB 3100:IF K$=E$ THEN 1380
1420 GOSUB 3010:IF SE<>2 OR RT<1 THEN 1440
1430 GOSUB 2700:GOSUB 2910:IF K$=E$ THEN 1410
1440 T$="":IF SE=1 THEN H$="STORE UNDER WHAT NAME?"
1450 IF SE=2 THEN H$="GET WHICH FILEBOX?"
1460 IF SE=3 THEN H$="REMOVE WHICH FILEBOX?"
1470 GOSUB 6000:IF T$="" OR K$=E$ THEN 1410
1480 T$=T$+".HIM":ON ERROR GOTO 1500
1490 GOSUB 2910:IF SE=1 THEN 1550 ELSE 1600
1500 IF ERR=53 AND SE=1 THEN RESUME 1600
1510 IF ERR=53 THEN PRINT "THAT FILEBOX IS NOT ON THIS
 DISK.":GOTO 1590
1520 IF ERR=71 THEN PRINT "THE DISK IS NOT READY; CHEC
K THE DRIVE.":GOTO 1590
1530 IF ERR=61 THEN PRINT "SORRY, THIS DISK IS FULL.
TRY ANOTHER.":GOTO 1590
1540 PRINT "ERROR";STR$(ERR);" HAS OCCURRED.  PLEASE C
HECK YOUR MANUAL.":GOTO 1590
1550 OPEN T$ FOR INPUT AS # 2:CLOSE 2
1560 PRINT "THAT FILEBOX IS ALREADY ON THIS DISK."
1570 PRINT "PRESS <SPACE BAR> TO REPLACE IT."
1580 GOSUB 2300:IF K$=SP$ THEN 1600 ELSE 1410
1590 PRINT L$:GOSUB 2600:GOSUB 2200:RESUME 1410
1600 CLS:GOSUB 2500:GOSUB 3010
1610 ON SE GOTO 1620,1700,1820
1620 OPEN T$ FOR OUTPUT AS # 2
1630 PRINT#2,TEST$:PRINT#2,FT:PRINT#2,RT
1640 PRINT#2,LM:PRINT#2,SP:PRINT#2,PF:PRINT#2,HF
1650 FOR J=1 TO FT:PRINT#2,CHR$(34);F$(J);CHR$(34)
1660 NEXT J:IF RT=0 THEN 1690
1670 FOR J=1 TO RT*FT
1680 PRINT#2,CHR$(34);Y$(J);CHR$(34):NEXT J
1690 CLOSE 2:GOSUB 2600:GOTO 1410
1700 OPEN T$ FOR INPUT AS # 2
1710 INPUT#2,C$:IF C$=TEST$ THEN 1740
1720 CLOSE 2:PRINT "THAT IS NOT A FILEBOX FILE."
1730 GOTO 1810
1740 INPUT#2,FT:INPUT#2,RT:INPUT#2,LM
1750 INPUT#2,SP:INPUT#2,PF:INPUT#2,HF
1760 FOR J=1 TO FT:INPUT#2,F$(J):NEXT J
1770 IF RT=0 THEN 1790
1780 FOR J=1 TO RT*FT:INPUT#2,Y$(J):NEXT J
1790 CLOSE 2:PRINT "FILEBOX NOW IN MEMORY."
1800 IF FT>0 THEN MAX=2700\FT ELSE MAX=0
1810 GOSUB 2600:GOSUB 2200:GOTO 1410
1820 KILL T$:GOSUB 2600:GOTO 1410
1830 GOSUB 3100:IF SE=1 OR K$=E$ THEN 140 ELSE CLS:END
2000 K$=INKEY$:IF K$="" THEN 2000 ELSE RETURN
2100 LOCATE ,,1,0,7:GOSUB 2000:LOCATE ,,0:RETURN
2200 GOSUB 2000:IF K$<>E$ THEN 2200 ELSE RETURN
2300 GOSUB 2000:IF K$<>E$ AND K$<>SP$ THEN 2300
2310 RETURN
2400 GOSUB 2100
2410 IF K$<>E$ AND (K$<"1" OR K$>A$) THEN 2400
2420 RETURN
2500 PRINT L$:PRINT:PRINT L$:RETURN
2600 LOCATE 23,1:PRINT L$
2610 PRINT TAB(11);"PRESS <Esc> TO EXIT.";:RETURN
2700 PRINT "WARNING!  USE OF THIS OPTION WILL ERASE"
2710 PRINT "CONTENTS OF ALL CARDS FROM MEMORY."
2720 PRINT:PRINT DM$(0):GOSUB 2300:RETURN
2800 CALL CD(A%,BL%):LOCATE A%,1:RETURN
2900 A%=4:BL%=19:GOSUB 2800:RETURN
2910 A%=4:BL%=14:GOSUB 2800:RETURN
2920 A%=2:BL%=1:GOSUB 2800:RETURN
3000 R$=M$(MS):GOTO 3020
3010 R$=SM$(MI(MS)+SE-1)
3020 GOSUB 2900:GOSUB 2920
3030 PRINT SPC((40-LEN(R$))/2);R$:LOCATE 4,1:RETURN
3100 GOSUB 3000:PRINT:FOR I=MI(MS) TO MI(MS+1)-1
3110 PRINT TAB(6);"<";CHR$(I+49-MI(MS));"> ";SM$(I)
3120 PRINT:NEXT I:A$=RIGHT$(STR$(MI(MS+1)-MI(MS)),1)
3130 PRINT:PRINT TAB(10);"SELECTION -->";
3140 GOSUB 2400:SE=VAL(K$):RETURN
3200 GOSUB 2900:IF FT<1 THEN RETURN
3210 FOR I=1 TO FT
3220 PRINT "LINE";STR$(I);": ";F$(I):NEXT I
3230 PRINT L$:IF MS=3 OR MS=4 THEN RETURN
3240 IF SE=4 THEN GOSUB 2200:RETURN ELSE RETURN
3300 T=(C-1)*FT+L:H$=F$(L)+":":T$=""
3310 IF W$="C" THEN T$=Y$(T)
3320 GOSUB 6000:RETURN
3400 W$="":LPRINT TAB(LM+15);"CARD";J
```

```
3410 FOR Z=1 TO FT:T$="":IF HF THEN T$=F$(Z)+": "
3420 LPRINT TAB(LM);T$;Y$((J-1)*FT+Z)
3430 W$=INKEY$:IF W$=E$ THEN Z=FT:J=R2
3440 NEXT Z:IF W$=E$ THEN RETURN
3450 IF SP=0 THEN 3470
3460 FOR Z=1 TO SP:LPRINT:NEXT Z
3470 GOSUB 2910:IF PF=0 THEN RETURN
3480 PRINT DM$(0):GOSUB 2300:IF K$=SP$ THEN RETURN
3490 J=R2:RETURN
3500 PRINT TAB(15);"CARD";J:PRINT L$
3510 FOR Z=1 TO FT:PRINT F$(Z);": ";Y$((J-1)*FT+Z)
3520 NEXT Z:PRINT L$:RETURN
3600 PRINT "PRESS <SPACE BAR> WHEN PRINTER IS READY."
3610 GOSUB 2300:RETURN
3700 RF=-1:H$="?":T$="":GOSUB 6000:PRINT L$
3710 IF K$=E$ OR T$="" THEN RETURN
3720 T=VAL(T$):IF T>0 AND T<=RT THEN RF=0:RETURN
3730 PRINT DM$(1):GOSUB 2200:RETURN
3800 GOSUB 3600:IF K$=E$ THEN RETURN
3810 FOR J=R1 TO R2:GOSUB 3400
3820 NEXT J:LPRINT:RETURN
3830 LOCATE 19,1
3840 PRINT "PRESS <C> TO CHANGE THIS CARD,"
3850 PRINT "PRESS <P> TO PRINT IT,"
3860 PRINT "PRESS <R> TO REMOVE IT, OR"
3870 PRINT "PRESS <SPACE BAR> TO MOVE TO NEXT CARD.":R
ETURN
4000 GOSUB 2910:GOSUB 3500
4010 GOSUB 2000:IF K$=E$ THEN W$=E$:J=RT:RETURN
4020 IF K$=SP$ THEN RETURN
4030 IF K$="C" THEN 4090 ELSE IF K$="R" THEN 4140
4040 IF K$<>"P" THEN 4010 ELSE GOSUB 2900
4050 IF F THEN GOSUB 3600:IF K$=E$ THEN 4080
4060 F=0:PRINT "NOW PRINTING CARD";J
4070 GOSUB 3400:LPRINT
4080 J=J-1:GOSUB 3830:RETURN
4090 GOSUB 2900
4100 GOSUB 3010:FL=40:PRINT TAB(15);"CARD";J
4110 C=J:W$="C":FOR L=1 TO FT:GOSUB 3300
4120 IF K$=E$ THEN L=FT ELSE Y$(T)=T$
4130 NEXT L:J=J-1:GOSUB 3830:RETURN
4140 GOSUB 2900:GOSUB 3500
4150 PRINT "PRESS <SPACE BAR> TO REMOVE THIS CARD."
4160 GOSUB 2300:GOSUB 3830:IF K$=E$ THEN J=J-1:RETURN
4170 IF J=RT THEN 4190
4180 FOR Z=(J-1)*FT+1 TO (RT-1)*FT:Y$(Z)=Y$(Z+FT):NEXT
 Z
4190 RT=RT-1:J=J-1:RETURN
4200 PRINT "<SPACE BAR> TO MOVE TO NEXT CARD.":RETURN
5000 GOSUB 3210:A$=RIGHT$(STR$(FT),1)
5010 W$="":PRINT "SELECT CARDS BY WHICH LINE #?";
5020 GOSUB 2400:IF K$=E$ THEN RETURN
5030 V=VAL(K$):GOSUB 2910
5040 PRINT "WHAT TEXT ARE YOU SEARCHING FOR?"
5050 FL=40:H$="?":T$="":GOSUB 6000
5060 IF K$=E$ OR T$="" THEN RETURN
5070 GOSUB 2900:LOCATE 5,5
5080 PRINT "<1> MATCH FROM BEGINNING OF LINE"
5090 PRINT RE$;TAB(5);"<2> SEARCH WHOLE LINE":PRINT
5100 A$="2":PRINT TAB(8);"SELECTION -->";
5110 GOSUB 2400:IF K$=E$ THEN RETURN
5120 GOSUB 2900:SF=0:SR$=T$:LS=LEN(SR$)
5130 J=1:IF K$="2" THEN 5190
5140 LOCATE 4,10:PRINT "CHECKING CARD";J
5150 IF SR$<>LEFT$(Y$((J-1)*FT+V),LS) THEN 5170
5160 SF=1:W$="":GOSUB 3830:GOSUB 4000:GOSUB 2900
5170 X$=INKEY$:IF W$=E$ OR X$=E$ THEN RETURN
5180 J=J+1:IF J<=RT THEN 5140 ELSE 5290
5190 Z$(0)=Y$((J-1)*FT+V):LZ=LEN(Z$(0))
5200 LOCATE 4,10:PRINT "CHECKING CARD";J
5210 IF Z$(0)="" OR LZ<LS THEN 5280
5220 FOR W=1 TO LZ-LS+1
5230 IF SR$<>MID$(Z$(0),W,LS) THEN 5250
5240 W=256:SF=1:W$="":GOSUB 3830:GOSUB 4000:GOSUB 2900
5250 X$=INKEY$:IF W$=E$ OR X$=E$ THEN W=300
5260 NEXT W:IF W=300 THEN RETURN
5270 IF W$=E$ OR X$=E$ THEN RETURN
5280 J=J+1:IF J<RT+1 THEN 5190
5290 GOSUB 2900:IF SF<1 THEN 5310
5300 PRINT "NO MORE CARDS MATCH!":GOSUB 2200:RETURN
5310 PRINT "NO CARDS MATCH!":GOSUB 2200:RETURN
6000 PRINT H$;:XL=POS(0):YL=CSRLIN:PC=2:T$=SP$+T$
6010 LOCATE YL,XL:PRINT T$;E$;SP$
6020 LOCATE YL,XL+PC-1
6030 GOSUB 2100:IF K$=RE$ OR K$=E$ THEN 6130
6040 IF LEN(K$)=1 THEN 6090
6050 K=ASC(MID$(K$,2)):CU=(K=75)-(K=77)
6060 IF K=83 THEN 6080 ELSE IF CU=0 THEN 6030
6070 PC=PC+CU:PC=PC-(PC<2)+(PC>LEN(T$)+1):GOTO 6020
6080 T$=LEFT$(T$,PC-1)+MID$(T$,PC+1,LEN(T$)):GOTO 6010
6090 IF K$<SP$ THEN 6030
6100 IF LEN(T$)>FL-XL-1 THEN 6030
6110 T$=LEFT$(T$,PC-1)+K$+MID$(T$,PC,LEN(T$))
6120 PC=PC+1:GOTO 6010
6130 T$=MID$(T$,2,FL):LOCATE YL,XL+1:PRINT T$;SP$
6140 LOCATE YL+1,1:RETURN
7000 DATA DESIGN CARD FORMAT,ADD CARD(S)
7010 DATA DISPLAY/CHANGE/REMOVE CARD(S),PRINT CARD(S)
7020 DATA LIST ALL FILES ON DISK
7030 DATA GET NEW/STORE/REMOVE FILEBOX,QUIT
7040 DATA 4,ADD NEW LINES,DELETE LINES
7050 DATA CHANGE NAMES OF LINES,DISPLAY CARD FORMAT
7060 DATA 2,ADD AT END,INSERT BEFORE END
7070 DATA 2,LOOK AT CARDS CONSECUTIVELY
7080 DATA WORK WITH SELECTED CARD(S)
7090 DATA 5,PRINT ONE CARD,PRINT A RANGE OF CARDS
7100 DATA PRINT ALL CARDS,PRINT SELECTED CARD(S)
7110 DATA CHANGE PRINTER OPTIONS,2,"DISK A:","DISK B:"
7120 DATA 3,STORE THIS FILEBOX ON DISK
7130 DATA GET A FILEBOX FROM DISK
7140 DATA REMOVE A FILEBOX FROM DISK
7150 DATA 2,RETURN TO MAIN MENU,QUIT
8000 DATA "PRESS <SPACE BAR> TO CONTINUE."
8010 DATA NO SUCH CARD!,NO MORE CARDS!
8020 DATA NO CARDS PRESENT.
9000 DATA &H55,&H06,&H8B,&HEC,&HB4,&H0F,&HCD,&H10,&H8A
9010 DATA &HDC,&H80,&HF8,&H07,&H75,&H08,&HB8,&H00,&HB0
9020 DATA &H8E,&HC0,&HF9,&H72,&H05,&HB8,&H00,&HB8,&H8E
9030 DATA &HC0,&H8B,&HB6,&H0A,&H00,&H8B,&H84,&H00,&H00
9040 DATA &HFE,&HC8,&HF6,&HE3,&HD1,&HE0,&H8B,&HF8,&H8B
9050 DATA &HB6,&H08,&H00,&H8B,&H8C,&H00,&H00,&HB4,&H07
9060 DATA &HB0,&H20,&HB7,&H00,&H51,&H8B,&HCB,&HFC,&HF3
9070 DATA &HAB,&H59,&HE2,&HF7,&H07,&H5D,&HCA,&H04,&H00
```

COMPUTERS WE COVER

We regularly present two or more programs in each issue for the Apple II series; Atari 400/800, 600/800XL, and 130XE; Commodore 64 and 128 (in C 64 mode); IBM PC and compatibles; Macintosh; and Tandy Models III/4 and Color Computer. However, occasionally we have to omit versions when a program requires capabilities that some of these computers lack. For example, we usually won't run a Tandy Model III or 4 version of a program featuring sound and/or color graphics. And many Microtones programs can only run on computers that have three voices, which eliminates the Apple II series; IBM PC and compatibles (except the PC*jr* with Cartridge BASIC); and the Tandys.

In addition, we publish at least one program each issue for the Adam, TI-99/4A, and VIC-20. In the future, we also hope to cover the Atari 520ST and the Amiga.

This month, these programs can be found here in The Programmer and in Microtones (in the K-POWER section of FAMILY COMPUTING).

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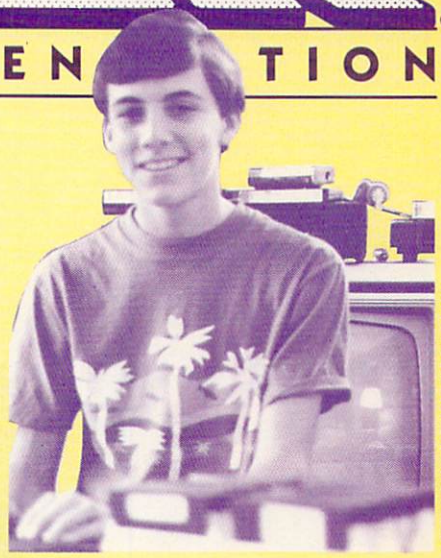
CIRCLE READER SERVICE 9

POWER
FOR THE COMPUTER GENERATION
Edited by Anne Krueger

That Old-Time Rock 'n' Roll Program Page 84

Making It Big as a Computer Consultant



PHOTOGRAPH BY GEORGENE MULLER

Have you ever looked at someone less computer-proficient than yourself and thought, "Yikes. What a dummy." Josh Ruxin, 15, of Ridgefield, Connecticut, had those thoughts, too. But instead of mocking the novice scratching his head in the computer store, Josh turned it to his advantage—he started his own consulting business. You could, too!

Know nothing about computing? Call Josh Ruxin. Can't figure out what computer system would be best for your family? Call Josh Ruxin. Pulling out your hair over computer salespeople who're less than helpful? Call—you guessed it—Josh Ruxin!

Josh is a computer fanatic, a former sysop of a 24-hour bulletin board, *and* a prospering computer consultant. He's developed a thriving business helping computer novices find a system that fits their needs. He shows the individual or family how to use a computer, from hooking it up and running programs to troubleshooting system problems. Josh started his business, which he calls Computer Catch, two years ago.

It all began when "people who really wanted to buy computers but were scared off by the complexity began asking me for help," Josh says. Before he knew it, he was traveling to clients' homes and interviewing family members who planned to use the computer. He helps them determine what they want the system to do and how much they want to spend.

But it doesn't stop there. Josh shops around and puts together a complete system for his clients, including basic hardware, peripherals, and software. He also delivers the system and hooks it up. "This eliminates the sinking feeling many people get when they're faced with a mountain of boxes, a tangle of cables, and a manual that seems to be written in a foreign language!" Josh explains.

Josh makes sure his clients understand the ins and outs of the system, typically saving novices from five to 15 hours of frustrating time they'd spend glued to the monitor and manual. In case one of the new components fails the first time, Josh even carries a spare computer system with him to substitute for the defective equipment while he exchanges it. Although Josh favors Commodore equipment, he has worked with other manufacturers.

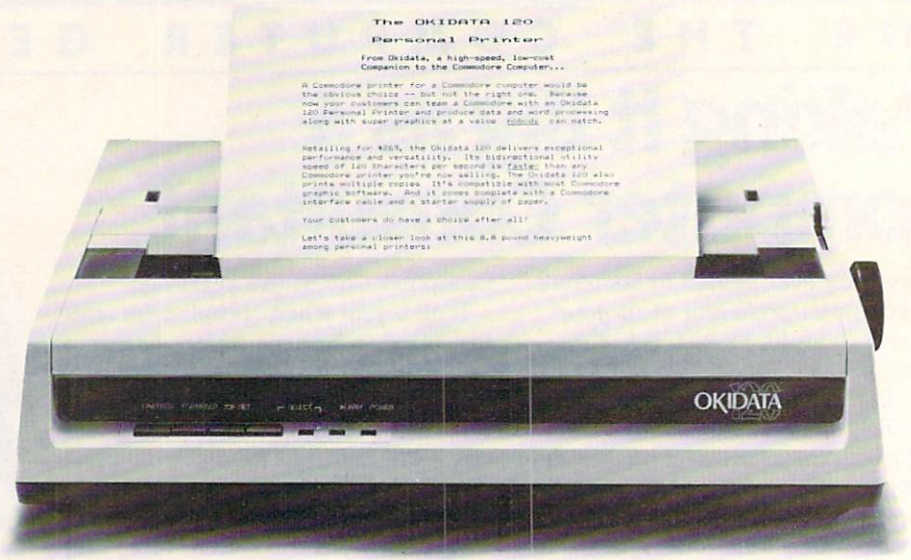
His fee: "I charge a percentage of the cost of the equipment, since the more they buy, the more help they need," Josh says. Computer Catch earned about $2,000 in 1984 and even more in 1985. Josh's future plans include investing in Commodore stock and purchasing the Commodore Amiga. And next year? Well, Josh will be 16 and, he says, "My business will be a *lot* bigger because I'll be able to *drive*!"

—GEORGENE MULLER

Software Scoop!

Can *you* name the sequal to ***Zork***? If so, you could be one of 20 adventurers who'll win an **Infocom** game of their choice. How, you're asking? Well, **QuestBusters**—the monthly newsletter for adventure-game lovers—is sponsoring a contest. To qualify, send in the name of the sequel to *Zork*, along with a self-addressed, business-size stamped envelope to: QuestBusters, 202 Elgin Court, Wayne, PA 19087. The contest deadline is Feb. 1, so whaddya waiting for? . . . . Ready to play hardball, tough guys and dolls? Then try ***Hardball*** from those clever ex-**Activision** people at **Accolade**. The action's all yours for Commodore 64 or 128 ($29.95), or Apple computers ($34.95) . . . . Say, have you heard about the submarine simulation called ***Silent Service***? It's a super software game with five stunning battle screens, six skill levels, and stimulating sub strategies in the South Pacific. From **Microprose** for your Commodore, Apple, IBM, and Atari computers ($34.95). . . . The "ultimate modern-day computer mystery" is what Activision is calling its game ***Hacker***. There's a mystery, there are different solutions, there's a secret, there are no clues, no instructions, and no rules and that's all we'll say. Except that it's for Atari and Commodore 64 and is planned for Apple. It costs between $25 and $35. S'all for now. . . .

Left Brain.



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To run Plug 'n Print software, the Commodore 64, 128 and PLUS 4 require disk drive.
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Wizards Electronics
Zayre

Girls Just Wanna Compute!

The following is an opinion article by Rachel Parry, a 15-year-old computer enthusiast from Mansfield, Ohio, where she attends Madison High School. If you'd like to air your opinions on "computer liberation," please address your reply to: K-POWER, *730 Broadway, New York, NY 10003.*

Computers are supposed to bridge the generation gap, right? How many of you have helped your parents, teachers, or other adults with a computer-related problem? There seems to be equal opportunity in that respect most of the time, but what about the boy-girl gap?

There are certain things that almost always fall into the category of boys vs. girls. Some of them have changed with the times. Girls are no longer looked down on if they don't wear lacy dresses all of the time. Little boys can play with dolls (but they're called "action figures" when a boy plays with them).

But boys still are expected to be "brains" in math and science. And it seems that many people associate *computers* with math and science. Can only boys be computer geniuses? Of course not. But sometimes it looks that way.

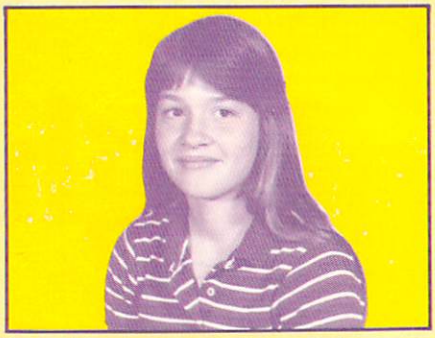
Take my school, for example. There is a group of very intelligent kids who're literally years ahead of the average math student and do very well in advanced science classes. Most of them are "computer whizzes."

By hearing that description, you'd think they fit snugly into the stereotype that all intelligent life on the juvenile level is short, wears Coke-bottle glasses, carries a calculator, wears shirts buttoned up to the point of strangulation, knows an exceptional amount about computers, and is male. This group isn't—except for the last two, which are the points I'd like to write about.

These boys are smart, but they're not the only ones who know a bit from a byte. Girls are right up there with them. Sometimes people don't realize this.

For example, in the popular movie *WarGames* from a few years back, where did the girl stand in terms of computer knowledge? I'll tell you where she stood: right behind the computer genius, a boy. She stood over his shoulder and was mesmerized by his talent. Would the effect have been the same if the roles were reversed? In the media, boys are unmistakably the computer experts.

I don't know why this is, but I do know *it's not right.* There have been women in space, women in high positions in our judicial system, and a woman vice-presidential candidate. And still, many people feel uncomfortable with females in positions typically held by males. Why? And, more importantly, what can be done to change this view?



Rachel Parry's request: She wants female computer users to be given the same chance as males to learn and grow.

I don't know why women have always been a few steps behind men. But I do know how it can begin to change. Girls, get out there and show the world that we, too, can be computer, math, and science geniuses. Don't be discouraged if things are rough—they will improve. Guys, encourage your female counterparts in their quest for computer greatness. Maybe there is a girl out there who knows a programming trick that could really help you. Don't feel like your territory is being invaded. It's not. Everyone wants to know about computers.

A computer is a useful, educational, and recreational tool. Its benefits should be enjoyed by *everyone.* Computer liberation is on its way!

Hackers *Can* Be Poets

Can hackers be poets? Can hi-tech mix with art? Please help us find out, by doing your part. . . .

Since we made that poetic request in the June K-POWER, we've been talking about rhyme, meters, and rhythm around here almost more than we talk about programming! Here are the top two poetic (and entertaining) entries. Their authors received software prizes. Jeff Dague, 14, from Clinton, Iowa received an honorable mention.

Hacker poet Alex Oliphant

B.C.—Before Computers

—SAMANTHA POZNER, *14*
Albany, New York

In the days of the cavemen,
No computers had they.
They had a hard life,
Writing in clay.

The ancient Greek myths
Would have had more success,
If they hadn't been told,
But instead, word processed.

The Dark Ages, you see,
Would not have had to occur,
If people had learned
By the light of a cursor.

Back in 1775,
When Paul Revere rode,
A trip could have been saved,
If the message had gone
By computer code.

Now in almost every home,
A computer is found.
But God only knows,
For what next we are bound!

More K Power

—ALEX OLIPHANT, *13*
Concord, Massachusetts

I bought a computer
To save me some time,
Maybe help on my homework
Or help solve a crime.
But since it's been home
(You'll know what I mean),
All I do is sit and punch buttons
And stare at the screen.

My room is a shambles,
My chores are undone,
My parents now urge me
To get out in the sun . . .
I tell them "Yah-yah,"
Just give me one hour . . .
I could solve the world's problems
With just a little more K power!

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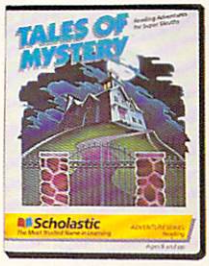

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Program Selected (Check one box):

Grades 3-5: Tales of Mystery		*Grades 6-8: Agent USA*	
☐ Apple	61218	☐ Apple	61226
☐ Commodore-64	61234	☐ Commodore-64	61242
☐ IBM PC & IBM PCjr	61259	☐ IBM PC & IBM PCjr	61267

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STRATEGY

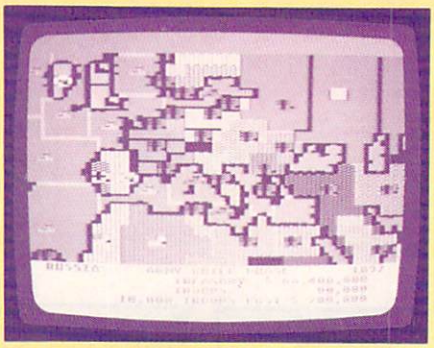
TIPS, TRICKS, AND HINTS

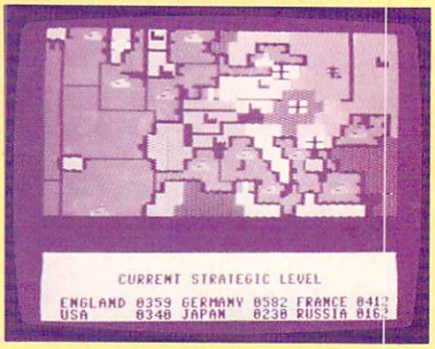
COLONIAL CONQUEST

SSI. Strategy/simulation. (*See review in the December 1985* FAMILY COMPUTING.) Your mission: As one of the six major powers (England, Germany, France, United States, Japan, and Russia) in the Age of Imperialism, you must try to gain power by colonizing neutral countries. Subverting other countries, fortifying your own, and waging war against one or more of the major nations are some of the options available. (Hints and game for Atari, C 64).

If a foreign power starts to move into an area that you want (especially a heavily populated one), let it take over what it wants. Then invade the land that was taken over, preferably before it's fortified. If you're playing against the computer at a high skill level, you might be better off finding a new region or taking over what you can, and then getting out of the war with economic aid.

Never invade a country in a different region by sea unless you're sure of victory. If you have a colony in the area, send your men there and stage the attack by land. If you don't have holdings in the region, completely subvert one country and send your men there.





Don't invade a country from two or more places unless you are short on time or if it's a certain victory. Each time you enter a country it's considered a separate attack, so it's better to invade in one major offensive than with many smaller ones. You'll save men *and* points by grouping in one area and attacking from there.

When playing against computer opponents at skill levels of seven to nine, it's imperative that you don't get into a war with them until you've played long enough to amass a large army (more than two to three million).

Russia: Initially, concentrate on building up your army, ignoring your navy. Pick off one or two countries at a time and keep large reserves of men in them. You'll be best off keeping to regions six, seven, and the eastern part of three.

When your budget tops 10 million dollars, start building million-man armies each year and march them to the fronts. With these waves of men you should be able to overrun France and even Germany (only on lower skill levels). Finally, when your position is secure, start building a navy and sending men overseas (make sure you have utilized the subversion hint).

United States: Try to gain control of region one first, starting with Quebec and Alaska in the north and Mexico in the south. Once you hold Mexico, send a large number of troops down through Central America into South America. Build your forces on the west coast, since you will have access to both Canada and Central America. —SPECIAL Ks

PHANTASIE

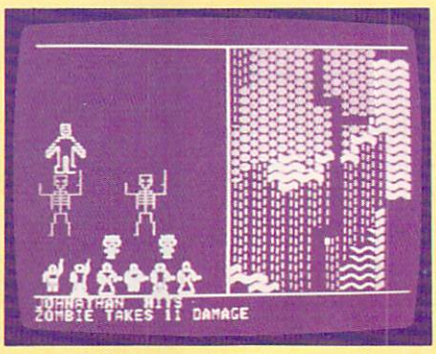
SSI. Role-playing adventure. In this swords-and-sorcery game, you must choose a band of six adventurers from a huge variety of races and classes, and then seek out and destroy the Dark Lord. Along the way you'll come across a plethora of monsters, tricks, traps, treasures, towns, and, of course, dungeons. (Hints and game for Apple).

Before you can take the water rune, you need to visit three magic pools scattered around the landscape.

Although Random Creatures are difficult to train at first, they usually make better fighters or thieves than the standard races. You'll have more gold than you know what to do with later on.

In the beginning, you should allocate most of the shares to your weaker characters. This will increase their experience levels and consequently their hit points, enabling them to survive longer.

Although your thieves might not like it, make sure you destroy everything in the Dark Lord's dungeon (with the sole exception of his wand). Also, make sure you bring as many magic potions as you can carry. To get them, go through all the towns and buy out the stores.



Whenever anyone tells you anything or you read something on a wall, make sure you copy it down word for word. This is especially important in the dungeon with the Bleebs.

(Apple only.) When you're fairly powerful (ninth or 10th level), go into the dungeon of Woodville. Once there, deface the top statue in the temple. A minor deity will attack you, but it isn't too hard to defeat it. You will receive a lot of experience as well as gold. Make sure when you leave the dungeon that you don't save its status. That way you'll be able to repeat the process as much as you like. —SPECIAL Ks

VOODOO CASTLE

Adventure International. Text adventure. Your mission: Amid the chambers and dungeons of Voodoo Castle, you must find a way to remove a curse from Count Cristo. (Hints and game for all computers.)

The closed stone door can be opened with the wave of a ring.

Drink the mixed chemicals for a small surprise.

A cleaning a day keeps the idol OK.

The animal heads in plain view are into safe hiding.

Many ex-cons tell of things they *saw* in prison.

When you see a plaque, wave the sack, then enter the crack.

I'll tell you but once
Say "ZAP" to the ju-ju man
I hope you listened.

—MIKE HUEBSHMAN, *15, Thorofare, New Jersey*; MICHAEL HARRISON, *16, Hattiesburg, Mississippi*; MICHAEL BRUNSON, *14, Forth Worth, Texas*

HINT HOTLINE

REALM OF IMPOSSIBILITY, Electronic Arts (Atari). Arcade/strategy. Your mission: By exploring different planes of existence and avoiding the monsters there, you must try to recover nine crowns.

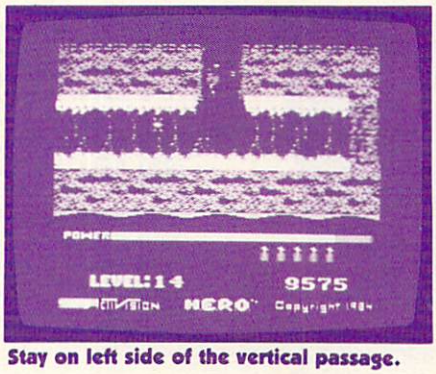
As soon as you enter a room, hold down the OPTION key. This will cause the monsters to ignore you. When you reach an exit, press yourself against it and release the button. You will move to the next room, where you can repeat the process. —GEORGE SCOTT, *14, Salt Lake City, Utah*

GYRUSS, Parker Brothers (Atari, C 64). Arcade/skill. Your mission: to battle your way through hordes of aliens and reach Earth.

When you get to the chance screens for each planet, position your ship as follows. Neptune: T, B, B, E Uranus: R, R, B, L. Saturn: Bottom left, B, R, T. Jupiter: B, B, T, T. Mars: R, B, L, T. Earth: T, L, B, R. T-Top, B-Bottom, R-Right, L-Left. The first letter refers to the position your ship should be in to shoot the first wave of aliens, etc. —HYUON KIM, *14, Tacoma, Washington*

BEACH HEAD II, Access (C 64). Arcade/skill. Your mission: As the Allied forces leader, you must free your comrades from the prison of the maniacal Dictator. As the Dictator, don't let the Allied forces escape alive.

In the "escape" sequence, stay low and to the side of the road. When you're coming within sight of a wall, move as high as you can and then tap the joystick forward twice.



Stay on left side of the vertical passage.

You'll be at the correct altitude to destroy the tank on the wall. —CHRISTOPHER BURKE, *13, Elm Grove, Wisconsin*

H.E.R.O., Activision (Atari, C 64). Arcade/skill. Your mission: Wearing a helicopter backpack, and armed with a laser and several sticks of dynamite, you must plummet into the Van Ryzin mine to rescue trapped miners from an earthquake.

Using the laser to blast through walls is much safer than using dynamite in areas where retreating could be deadly.

Unless you've memorized the layout of the mine, slow down before descending and keep to the left of wide, downward passages to avoid breaking lights. —SPECIAL Ks

M.U.L.E., Electronic Arts (Atari, C 64). Strategy/simulation. Your mission: to establish the most profitable colony on a distant planet.

During Auctions, the countdown passes more quickly when no players are moving between the Buy and Sell lines. If you are selling an item and wish to have more time to drive up the price, move down from the Sell position immediately following the start of the auction. Keep moving until another player is above the Buy line. Return to Sell status and wait until the last second to sell. —ALEX SHAKAR, *17, Brooklyn, New York*

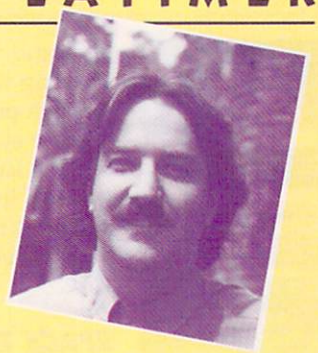
SPACE TAXI, Muse (Apple, C 64). Arcade/skill. Your mission: to carry people to and from the various hot spots in your 23rd-century metropolis.

On the Beanstalk level, move as quickly as you can to pad one; land as far right as you can. If you manage to pick up your passenger before pads two and three finish growing, your passenger will ask to go "up." —FRED RIDING, *13, Roosevelt, Utah*

We need a few good hints! Help K-POWER readers be all that they can be by sending us hints for your favorite games. We have all of the *Zork* and *Ultima III* hints we can handle, but we'll gladly print and pay $10 for good hints we haven't published yet. Just put your full name (no aliases, please), complete mailing address, phone number, and birthdate on the letter with your hints, and send them to Hint Hotline, c/o K-POWER, 730 Broadway, New York, NY, 10003. We can't print your hints unless we have all of the above information, nor can we answer specific game questions by mail. We hope to hear from you soon! (Note: the computer systems listed in brackets indicate the computer versions the hints work for.)

MUSIC PROGRAMS

BY JOEY LATIMER



In the past few years, there's been renewed interest in the musical styles of the '50s. Back then, "flat tops with fenders" were in . . . musicians wore leather jackets and carried combs in their back pockets . . . and now it's all come 'round again! While most of the recording artists of the '50s have faded away, some still shine. People like Chuck Berry, B.B. King, Chubby Checker, and Fabian are still playing the music that made them famous, and sounding better than ever.

This month's *Microtones* is a tribute to those great stars and their music. It's called *Old-Time Rock 'n' Roll*. The song was transferred, note for note, from guitar, and reflects some popular licks from '50s classics like Chuck Berry's immortal "Johnny B. Goode." If you like what you hear, then hop on down to the local record store and ask the clerk for some "Old-Time Rock 'n' Roll!"

Hackers' note: If you prefer blues to rock 'n' roll, try slowing the song down, as shown in the REM statement.

ATARI 400, 800, 600/800XL, & 130XE/*OLD-TIME ROCK 'N' ROLL*

```
10 DIM V1(102,2),V2(67,2),V3(30,2):GRAPHICS 1+16
20 FOR I=1 TO 102:READ A,B:V1(I,1)=A:V1(I,2)=B:NEXT I
30 FOR I=1 TO 67:READ A,B:V2(I,1)=A:V2(I,2)=B:NEXT I
40 FOR I=1 TO 30:READ A,B:V3(I,1)=A:V3(I,2)=B:NEXT I
50 FOR I=243 TO 1 STEP -1
60 SOUND 1,I,6,4:SOUND 2,(I+2),8,4
70 SETCOLOR 4,INT(I/16),I-INT(I/16)*16
80 FOR DE=1 TO I/12:NEXT DE:NEXT I
90 POSITION 0,10:PRINT #6;"OLD-TIME ROCK'N'ROLL"
100 P1=1:P2=1:P3=1:T1=0:T2=0:T3=0:DR=2
110 IF P1>17 AND DR=3 THEN SOUND 0,15,8,12
120 SOUND 1,V1(P1,1),10,8:SOUND 2,V2(P2,1),10,8
130 SOUND 3,V3(P3,1),10,8:POKE 708,INT((P1/103)*240)+8
139 REM --FOR BLUES, CHANGE "30" TO "100" IN LINE 140--
140 FOR DE=1 TO 30:NEXT DE
150 DR=DR+1:IF DR=5 THEN DR=1
160 T1=T1+1:IF T1=V1(P1,2) THEN T1=0:P1=P1+1
170 T2=T2+1:IF T2=V2(P2,2) THEN T2=0:P2=P2+1
180 T3=T3+1:IF T3=V3(P3,2) THEN T3=0:P3=P3+1
190 SOUND 0,0,0,0:SOUND 1,0,0,0
200 SOUND 2,0,0,0:SOUND 3,0,0,0
210 IF P1<103 THEN 110
220 GOTO 100
1000 DATA 47,1,40,1,35,1,29,5,47,1,40,1,35,1,29,5
1010 DATA 47,1,40,1,35,1,29,5,35,1,40,1,50,1,33,4
1020 DATA 35,1,40,1,50,1,60,1,40,1,33,2,40,1,33,1
1030 DATA 40,1,0,1,45,1,40,1,33,2,29,1,40,1,45,1
1040 DATA 47,1,45,1,40,1,33,2,40,1,33,1,40,1,29,1
1050 DATA 33,1,40,1,29,1,33,1,40,1,29,1,33,1,40,1
1060 DATA 29,1,33,1,45,1,50,1,60,1,45,1,50,1,60,2
1070 DATA 45,1,50,1,60,1,45,1,50,2,60,2,0,1,40,1
1080 DATA 33,1,42,1,35,1,45,1,37,1,47,1,40,4,0,4
1090 DATA 29,1,0,2,29,3,35,1,40,1,29,1,0,2,29,3
1100 DATA 35,1,40,1,29,2,35,2,40,2,35,2,29,2,35,2
1110 DATA 40,2,35,2,29,1,0,2,29,3,35,1,40,1,29,1
1120 DATA 0,2,29,3,35,1,40,1,128,8,64,5
2000 DATA 0,3,40,5,0,3,40,5,0,3,40,5,45,1,50,1
2010 DATA 60,1,40,4,45,1,50,1,60,2,121,2,108,2
2020 DATA 102,2,108,2,121,2,108,2,102,2,108,2
2030 DATA 162,2,144,2,136,2,144,2,162,2,144,2
2040 DATA 136,2,128,2,108,2,96,2,108,2,96,2,121,2
2050 DATA 108,2,102,2,108,2,162,2,144,2,136,2,144
2060 DATA 2,108,4,0,4,121,2,108,2,102,2,108,2,121
2070 DATA 2,108,2,102,2,108,2,162,2,144,2,136,2
2080 DATA 144,2,162,2,144,2,136,2,128,2,121,2,108
2090 DATA 2,121,2,108,2,121,2,108,2,121,4,108,13
3000 DATA 0,3,243,1,0,7,50,5,0,3,243,1,0,3
3010 DATA 243,1,0,3,162,4,182,1,204,1,243,2,182
3020 DATA 16,243,10,217,2,204,2,193,2,162
3030 DATA 8,182,8,243,8,162,4,0,4,182,16,243,10
3040 DATA 217,2,204,2,193,2,182,16,162,13
```

COMMODORE 64 & 128 (C 64 MODE)/*OLD-TIME ROCK 'N' ROLL*

```
10 DIM V1(102,3),V2(67,3),V3(30,3)
20 S=54272:FOR I=0 TO 23:POKE S+I,0:NEXT I
30 POKE S+24,15:POKE S+5,100:POKE S+6,100
40 POKE S+12,100:POKE S+13,100
50 FOR I=1 TO 102:READ V1(I,1),V1(I,2),V1(I,3):NEXT I
60 FOR I=1 TO 67:READ V2(I,1),V2(I,2),V2(I,3):NEXT I
70 FOR I=1 TO 30:READ V3(I,1),V3(I,2),V3(I,3):NEXT I
80 PRINT CHR$(147);:POKE S+4,129:POKE S+11,129
90 FOR I=1 TO 80:POKE S+1,I:POKE S+8,I
100 POKE 53281,INT(RND(1)*13)+2
110 FOR DE=1 TO 81-I:NEXT DE:NEXT I
120 POKE S+4,0:POKE S+11,0
130 POKE S+5,9:POKE S+6,15:POKE S+12,9
140 POKE S+13,15:POKE S+19,9:POKE S+20,15
150 POKE 53281,0:POKE 214,10:PRINT
160 PRINT TAB(9);CHR$(5);"OLD-TIME ROCK 'N' ROLL"
170 P1=1:P2=1:P3=1:T1=0:T2=0:T3=0:DR=2
180 POKE S+1,V1(P1,1):POKE S,V1(P1,2)
190 POKE S+8,V2(P2,1):POKE S+7,V2(P2,2)
200 POKE S+15,V3(P3,1):POKE S+14,V3(P3,2)
210 POKE S+18,33-96*(P1>17 AND DR=3)
220 POKE S+4,33:POKE S+11,33
230 POKE 53280,INT(RND(1)*13)+2
239 REM --FOR BLUES, CHANGE "3" TO "175" IN LINE 240--
240 FOR DE=1 TO 3:NEXT DE
250 POKE S+4,32:POKE S+11,32
260 POKE S+18,32-96*(P1>17 AND DR=3)
270 DR=DR+1:IF DR=5 THEN DR=1
280 T1=T1+1:IF T1=V1(P1,3) THEN T1=0:P1=P1+1
290 T2=T2+1:IF T2=V2(P2,3) THEN T2=0:P2=P2+1
300 T3=T3+1:IF T3=V3(P3,3) THEN T3=0:P3=P3+1
310 POKE S+4,0:POKE S+11,0:POKE S+18,0
```

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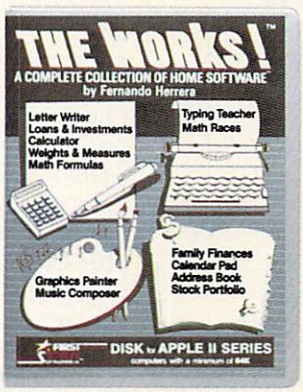

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```
320 IF P1<103 THEN 180
330 GOTO 170
1000 DATA 42,62,1,50,60,1,56,98,1,67,14,5,42,62
1010 DATA 1,50,60,1,56,98,1,67,14,5,42,62,1,50
1020 DATA 60,1,56,98,1,67,14,5,56,98,1,50,60,1
1030 DATA 39,222,1,59,190,4,56,98,1,50,60,1,39,222
1040 DATA 1,33,134,1,50,60,1,59,190,2,50,60,1,59
1050 DATA 190,1,50,60,1,0,0,1,44,192,1,50,60,1
1060 DATA 59,190,2,67,14,1,50,60,1,44,192,1,42,62
1070 DATA 1,44,192,1,50,60,1,59,190,2,50,60,1,59
1080 DATA 190,1,50,60,1,67,14,1,59,190,1,50,60,1
1090 DATA 67,14,1,59,190,1,50,60,1,67,14,1,59,190
1100 DATA 1,50,60,1,67,14,1,59,190,1,44,192,1,39
1110 DATA 222,1,33,134,1,44,192,1,39,222,1,33,134,2
1120 DATA 44,192,1,39,222,1,33,134,1,44,192,1,39,222
1130 DATA 2,33,134,2,0,0,1,50,60,1,59,190,1,47
1140 DATA 106,1,56,98,1,44,192,1,53,56,1,42,62,1
1150 DATA 50,60,4,0,0,4,67,14,1,0,0,2,67,14
1160 DATA 3,56,98,1,50,60,1,67,14,1,0,0,2,67
1170 DATA 14,3,56,98,1,50,60,1,67,14,2,56,98,2
1180 DATA 50,60,2,56,98,2,67,14,2,56,98,2,50,60
1190 DATA 2,56,98,2,67,14,1,0,0,2,67,14,3,56
1200 DATA 98,1,50,60,1,67,14,1,0,0,2,67,14,3
1210 DATA 56,98,1,50,60,1,15,210,8,31,164,5
2000 DATA 0,0,3,50,60,5,0,0,3,50,60,5,0,0
2010 DATA 3,50,60,5,44,192,1,39,222,1,33,134,1,50
2020 DATA 60,4,44,192,1,39,222,1,33,134,2,16,194,2
2030 DATA 18,208,2,19,238,2,18,208,2,16,194,2,18,208
2040 DATA 2,19,238,2,18,208,2,12,143,2,14,50,2,14
2050 DATA 238,2,14,50,2,12,143,2,14,50,2,14,238,2
2060 DATA 15,210,2,18,208,2,21,30,2,18,208,2,21,30
2070 DATA 2,16,194,2,18,208,2,19,238,2,18,208,2,12
2080 DATA 143,2,14,50,2,14,238,2,12,143,2,18,208,4
2090 DATA 0,0,4,16,194,2,18,208,2,19,238,2,18,208
2100 DATA 2,16,194,2,18,208,2,19,238,2,18,208,2,12
2110 DATA 143,2,14,50,2,14,238,2,14,50,2,12,143,2
2120 DATA 14,50,2,14,238,2,15,210,2,16,194,2,18,208
2130 DATA 2,16,194,2,18,208,2,16,194,2,18,208,2,16
2140 DATA 194,4,18,208,13
3000 DATA 0,0,3,4,48,1,0,0,7,39,222,5,0,0
3010 DATA 3,4,48,1,0,0,3,4,48,1,0,0,3,6
3020 DATA 71,4,5,152,1,4,251,1,4,48,2,5,152,16
3030 DATA 4,48,10,4,180,2,4,251,2,5,71,2,6,71
3040 DATA 8,5,152,8,4,48,8,6,71,4,0,0,4,5
3050 DATA 152,16,4,48,10,4,180,2,4,251,2,5,71,2
3060 DATA 5,152,16,6,71,13
```

IBM PC*jr* W/CARTRIDGE BASIC & TV OR MONITOR W/SPEAKER/*OLD-TIME ROCK 'N' ROLL*

```
10 SOUND ON:BEEP OFF:WIDTH 40:KEY OFF:CLS
15 B$="":C$="":D$="":E$="":F$="":G$=""
20 FOR I=1 TO 5:READ A$:B$=B$+A$:NEXT I
30 FOR I=1 TO 3:READ A$:C$=C$+A$:NEXT I
40 FOR I=1 TO 4:READ A$:D$=D$+A$:NEXT I
50 FOR I=1 TO 3:READ A$:E$=E$+A$:NEXT I
60 FOR I=1 TO 4:READ A$:F$=F$+A$:NEXT I
70 FOR I=1 TO 3:READ A$:G$=G$+A$:NEXT I
75 LOCATE 10,7,0
76 PRINT "*OLD-TIME ROCK 'N' ROLL*"
80 PLAY B$,D$,F$:PLAY C$,E$,G$:GOTO 80
998 REM --FOR BLUES, CHANGE "t100" TO "t32"--
999 REM --IN LINES 1000, 2000, AND 3000--
1000 DATA t100l16o4egao5ccccco4egao5ccccco4ega
1010 DATA o5ccccco4a#gea#a#a#a#agd#cga#a#ga#
1020 DATA gp16fga#a#o5co4gfd#fga#a#ga#go5co4
1030 DATA a#go5co4a#go5co4a#go5co4a#fd#cfd#c
1040 DATA cfd#cfd#d#ccp16ea#dac#g#cggggp4
1050 DATA o5cp8ccco4ago5cp8ccco4ago5cco4ap16
1060 DATA gp16aga#a#agggggo5cp8ccco4ago5cp8c
1070 DATA cco4ago2bbbbbbbbo3bbbbp16
2000 DATA t100l16o4p8.gggggp8.gggggp8.ggggfd#
2010 DATA cggggfd#cco2ccddd#d#ddccddd#d#ddo1
2020 DATA ggaaa#a#aaggaaa#a#bbo2ddeeddeeccdd
2030 DATA d#d#ddo1ggaaa#a#aao2ddddp4,ccddd#d#
2040 DATA ddccddd#d#ddo1ggaaa#a#aaggaaa#a#bb
2050 DATA o2ccddccddccddccc#c#ddddddddddddp16
3000 DATA t100l16o1p8.cp4p8.o4d#d#d#d#d#p8.
3010 DATA o1cp8.cp8.ggggfd#ccfffffffffffffffff
3020 DATA ccccccccccddd#d#eeggggggggffffffff
3030 DATA cccccccccggggp4,fffffffffffffff
3040 DATA ccccccccccddd#d#eeffffffffffffffff
3050 DATA gggggggggggp16
```

TANDY COLOR COMPUTER/*OLD-TIME ROCK 'N' ROLL*

```
10 DIM N(68,2)
20 CLS
30 FOR I=1 TO 68
40 READ N(I,1),N(I,2)
50 NEXT I
60 PRINT @196,"*OLD-TIME ROCK 'N' ROLL*"
70 P=1:T=1
79 REM --FOR BLUES, CHANGE "2" TO "6" IN LINE 80--
80 SOUND N(P,1),2
90 IF T=N(P,2) THEN T=1 ELSE T=T+1:GOTO 80
100 IF P<68 THEN P=P+1:GOTO 80
110 GOTO 70
1000 DATA 227,1,232,1,236,1,240,5,227,1,232,1
1010 DATA 236,1,225,5,227,1,232,1,236,1,240,5
1020 DATA 236,1,232,1,225,1,237,4,236,1,232,1
1030 DATA 225,1,218,1,176,2,185,2,189,2,185,2
1040 DATA 176,2,185,2,189,2,185,2,147,2,159,2
1050 DATA 165,2,159,2,147,2,159,2,165,2,159,2
1060 DATA 185,2,193,2,185,2,193,2,176,2,185,2
1070 DATA 176,2,185,2,176,1,204,2,200,2,197,2
1080 DATA 193,2,147,7,197,10,193,1,197,5,218,2
1090 DATA 210,2,204,2,210,2,218,2,210,2,204,2
1100 DATA 210,2,197,10,193,1,197,5,204,4,216,4
1110 DATA 223,4,232,1
```

MICRONOTES

So you love K-POWER's music programs, but your computer sounds crummy? **Bose Corporation** may have the product of your dreams: the **RoomMate speaker system**. This compact setup works with any sound source that has a headphone or phono jack, from TVs and VCRs to (yes!) electronic keyboards and computers. It's $229 for the Commodore Amiga, Apple Macintosh, and Apple IIc. Here's to better sound! . . . Speaking of sound, what about voice synthesis for the C 64/128? **Welwyn Currah** says its new product—**The Voice Messenger**—will turn your imagination into words for $59.95. Combined with another package called ***Easy Speech*** ($24.95), The Voice Messenger can make your adventure games "talk"!

Apple and IBM users interested in sound synthesis should look into **SynPhonix** products from **Artic Technologies**. The products are pretty techy, but start below $200 and can do some amazing things in the electronic speech department .

WHAT'S IN STORE

NEW HARDWARE ANNOUNCEMENTS

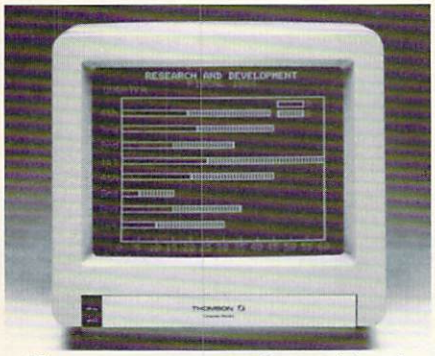
BY NICK SULLIVAN

MONITORS

Thomson CM 36512 VI

MANUFACTURER: Thomson Consumer Products Corp.
ADDRESS: 330 Washington St., Suite 509, Marina Del Rey, CA 90292; (213) 821-2995
PRICE: $429

Thomson, an American subsidiary of the $2 billion French electronics concern, Thomson Grand Public, has a whole line of computer monitors for professional and home use. One that straddles both markets is the CM 36512, which is a combination RGB/composite color monitor. Because it can accept both inputs, it can be used with virtually any computer—Apple, Atari, Commodore, and TI in composite mode, and Apple, IBM, and Tandy (with appropriate interfaces) in RGB mode. The monitor has an internal speaker and a switch that selects amber or green text.



If your computer isn't capable of RGB output, of course, this monitor may not be the right choice, unless you plan on eventually getting an RGB-ready computer.

COMPUTERS

Franklin Ace 2000 Series

MANUFACTURER: Franklin Computer
ADDRESS: Route 73, Haddonfield Rd., Pennsauken, NJ 08110; (609) 488-0666
PRICE: $699 to $999

Franklin Computer Corp., successfully sued by Apple for making computers that infringed on Apple's copyright, has apparently recovered from its "corporate turmoil," as Chief Executive Officer Morton David puts it. As proof, Franklin has introduced three new computers that run the "most popular" software for the Apple, including *AppleWorks*, *SuperCalc 3a*, the *PFS* series, and *Flight Simulator II*. The 65SC02 microprocessor is "functionally identical" to the 65C02 used in the new Apple IIe and IIc. Franklin's promise, as in the past, is to give you more machine for your money than Apple and access to the huge Apple software base.

The Franklin Ace 2200 ($999) has two built-in disk drives. The 2100 ($849) has one built-in drive, and the 2000 ($699) has no drive. All models have 128K of user memory, a parallel printer port, 40- and 80-column screen displays, a numeric keypad, and 12 programmable function keys. The function keys are preset with 12 often-used DOS commands. The keyboard uses a standard IBM Selectric layout and is detachable. Nine special BASIC editing keys provide standard commands such as CLEAR SCREEN, HOME, DELETE CHARACTER, etc.

A high-resolution Franklin monitor with a tilt-and-swivel base is available for $139. Two expansion slots are left open for Franklin- and Apple-compatible plug-in cards.

MISCELLANEOUS

G-Wiz Interface (Commodore)

MANUFACTURER: Cardco Inc.
ADDRESS: 300 S. Topeka, Wichita, KS 67202; (316) 267-3807
PRICE: $69

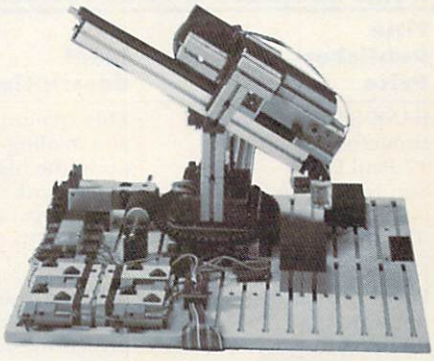
To use a non-Commodore printer with a Commodore computer, you need a third-party printer interface. Cardco, maker of the best-selling +G interface, has introduced an improved model: the G-Wiz. It plugs into the VIC-20, C 64, and C 128, and comes with all cables and connectors to hook up serial and parallel printers.

While it will work with most printers, the G-Wiz is designed specifically for Epson, Okidata, C. Itoh, and Seikosha dot-matrix printers. On letter-quality printers, you won't get the special Commodore characters and graphics. The G-Wiz has a self-test mode to check whether the switches are set correctly for the connected printer.

According to Cardco, the G-Wiz can "dump" graphics to a printer faster than any other interface.

Robotic Computing Kit

MANUFACTURER: Fischer America Inc.
ADDRESS: 175 Route 46 W., Fairfield, NJ 07006; (201) 227-9283
PRICE: $199



Fischer America calls it the "erector set of the eighties" and the "chemistry set of the computer age." Whatever it's called, the FischerTechnik Robotic Computing Kit contains all the elements needed to learn about and develop skills in computer-aided robotics. The kit includes electromechanical parts, software, and an interface unit for Apple II or Commodore 64 and VIC-20 computers.

With two minimotors, two gears, an electromagnet, three lamps, eight pushbuttons, and two potentiometers, the kit can be made into at least 10 different models. These include "traffic light with pedestrian button," "machine tool," "materials lift," "Towers of Hanoi," and "solar cell tracking" models. Each model has a set of experiments that teach you various aspects of computer control. The solar cell tracking model, for instance, can be programmed to maintain a constant angle toward the sun.

Building instructions and wiring plans are provided, as are simple BASIC programs to help you automate your robot model. The product is an offshoot of Fischer International's research on industrial robotics. RC

WHAT'S IN STORE SOFTWARE GUIDE

QUICK TAKES ON SOFTWARE—NEW AND NOTEWORTHY

Welcome to FAMILY COMPUTING's Software Guide, the most comprehensive listing available of two dozen of the newest, most noteworthy, and/or best programs on the market. Our reviewers include families from all over the country who have judged the software according to the following criteria: long-term benefits and applications, adaptability, and advantages of using a computer for a given task. Minimum memory requirements are: 48K for Apple II series; 48K for Atari; 128K for IBM PC/PC*jr* or compatibles; and 128K for Macintosh. More detailed reviews follow the chart. Unless otherwise noted, all programs are in disk format.

Here's a rundown of the rating categories and what they mean: **O** = Overall performance, given the limitations and capacities of the particular computer for which the software is intended. **D** = Documentation, or the instructions and literature that accompany a program. **EH** = Error-handling, the software's capacity to accommodate errors made by the user—an especially important consideration with software for younger users. **PS** = Play system, in the games reviews, the quality of the game design and the game's playability. **GQ** = Graphics quality, also evaluated in light of each particular brand's graphics capabilities. **EU** = Ease of use after the initial learning period, which varies from computer to computer. **V** = Value for money, or how the software measures up to its price.

HOME BUSINESS & PRODUCTIVITY

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
BANK STREET MAILER Broderbund Software 17 Paul Drive San Rafael, CA 94903 (415) 479-1170 $70 ©1985	This combination letter-writer and mailing-list program lives up to the high standards set by other *Bank Street* software. Produce personalized form letters with ease.†—MORGENSTERN	Reviewed on Apple IIc. Also for 128K Apple IIe; separate version for 64K Apple.	90-day warranty; $7.50 thereafter; user can make one backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	N/A	E	★ ★ ★
HOME DATA MANAGER Polarware/Penguin Software Inc. 830 Fourth Ave. Geneva, IL 60134 (312) 232-1984 $45 ©1985	An easy-to-learn information filing program, with a respectable report function for presenting your data. Its low cost and menu-driven commands make it suitable for novices. —WILSON	64K Apple. Second drive and printer recommended.	60-day warranty; $5 thereafter; user makes backup.	★ ★ ★	★ ★ ★	★ ★	N/A	E	★ ★ ★
NUTRI-CALC CAMDE Corp. 46 Prince St. Rochester, NY 14607 (716) 473-5330 $80 (Mac); $100 (Apple, IBM) ©1985	Tell the computer what you've eaten. It then tracks and analyzes your diet with an eye towards improving it. Includes an extensive data base of all types of foods. —AKER	Reviewed on Macintosh. Also for Apple; IBM PC/PC*jr*.	90-day warranty; $5 for backup.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	E	★ ★
ORTHO'S COMPUTERIZED GARDENING Ortho Information Services 575 Market St. San Francisco, CA 94105 (415) 894-0277 $50 ©1984	A data base of 750 different plants. Each can be listed by type, water and soil requirements, color, and specific regional needs. Use this program to organize your landscaping, but you'll need more to teach you how to garden. —RASKIN	Reviewed on IBM PC-compatible. Also for Apple IIe/IIc; C 64; IBM PC.	90-day warranty; user makes backup.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	E	★ ★ ★
WILLWRITER Nolo Press 950 Parker St. Berkeley, CA 94710 (415) 549-1976 $40 ©1985	Draw up your own will with the help of this fully legal software. Prompts you through the language of wills in easy steps designed for the layman.† —ZORNBERG	Reviewed on Apple. Also for C 64/128; IBM PC/PC*jr* and 256K compatibles; Macintosh. Printer required.	30-day warranty; user makes backup; updates available for 2 years.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	N/A	E	★ ★ ★
WORD MASTER SR. Green Valley Publishing, Inc. 7122 Shady Oak Road Eden Prairie, MN 55344 (800) 328-6061 $5 ©1985	This is so simple a word processor, it doesn't even come with a manual. Easy to use and incredibly inexpensive; it has online help and a sample letter feature. Perfect for 1–3 pages. —AMATO	Reviewed on C 64. Also for C 128.	Unlimited warranty; user makes backup.	★ ★	★ ★ ★	★ ★ ★	N/A	E	★ ★ ★ ★

RATINGS KEY **O** Overall performance; **D** Documentation; **EH** Error-handling; **GQ** Graphics quality; **EU** Ease of use; **V** Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

EDUCATION/FUN LEARNING

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
ANIMAL PHOTO FUN DLM Software One DLM Park Allen, TX 75002 (214) 248-6300 $30 ©1985	Discover the habitats of 36 animals in six photo-expedition games. Good for prereaders up to early grades. Parents may need to explain the concepts at first. —BUMGARNER ELTGROTH	Apple; color monitor recommended.	6-month warranty; $15 thereafter or for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
CLOWNING AROUND Panda/Learning Technologies, Inc. 4255 LBJ Freeway, Suite 131 Dallas, TX 75244 (214) 991-4958 $20 ©1985	Make your clown marionette move objects, such as fruit or fish, to their original positions on-screen. Challenges visual discrimination and memory skills up to age 10. —BUMGARNER ELTGROTH	Reviewed on Apple. Also for C 64. Color monitor recommended.	Unlimited warranty.	★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★
THE GREAT GONZO IN WORD RIDER Simon & Schuster 1230 Ave. of the Americas New York, NY 10020 (212) 245-6400 $35 (Apple); $30 (C 64) ©1985	Early readers match nouns and adjectives in a game difficult for the young and too "young" for the proficient. A delightful, 20-page "Muppet" storybook, full of chicken jokes, is the high point of this package. —SUMMERS	Reviewed on Apple. Also for C 64.	30-day warranty; $5 thereafter.	★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★
THE HALLEY PROJECT Mindscape, Inc. 3444 Dundee Road Northbrook, IL 60062 (312) 480-7667 $40–$45 ©1985	Navigate a spacecraft around our solar system on 10 secret missions. The sooner you know the constellations, the better in this learning game for ages 10+.† —SUMMERS	Reviewed on C 64. Also for Amiga; Apple; Atari; C 128. Joystick.	90-day warranty.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★	A	★ ★ ★ ★
I.B. MAGAZETTE I.B. Magazette, Inc. 1306 Petroleum Tower Shreveport, LA 71101 (318) 222-8088 $15 each; $150/year ©1985	A monthly collection of programs on disk. Contents vary from the useful (tax-deduction record-keeper) to the purely recreational. Also gives instructions in BASIC. An unpolished, but fun package. —BUMGARNER ELTGROTH	IBM PC/XT/PC*jr* and compatibles.	Unlimited warranty; $5 if user-damaged; user makes backup.	★ ★ ★	N/A	★ ★	★ ★ ★	E	★ ★ ★
LEAPS AND BOUNDS Muse Software 347 N. Charles St. Baltimore, MD 21201 (301) 659-7212 $40 ©1985	Toddler-friendly software for ages 3–8. A counting game and an alphabet game are enhanced with offbeat animation. Special "tape-recorder" feature in the art and music sections.† —SUMMERS	Reviewed on C 64. Also for Apple; 32K Atari; C 128; IBM PC/PC*jr*.	Unlimited warranty; $10 for backup.	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	E	★ ★ ★ ★
SEA SPELLER Fisher-Price, Div. of Spinnaker One Kendall Square Cambridge, MA 02139 (617) 494-1200 $20-$25 ©1984	Practice spelling and reading skills in this race-the-clock underwater adventure. Well-crafted graphics and sound effects entertain without distracting. For children reading at grade levels 1–4. —SUMMERS	Reviewed on C 64 (cart.). Also for Apple; C 64/128 (disk); IBM PC/ PC*jr*. Joystick.	30-day warranty; $5 thereafter.	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★	E	★ ★ ★ ★
WALLY'S WORD WORKS Sunburst Communications 39 Washington Ave. Pleasantville, NY 10570 (914) 769-5030 $69 ©1985	Tell Wally the wallaby to pick up words from a sentence. Then have him drop them in baskets representing parts of speech—noun, verb, etc. Makes parsing of sentences fun for ages 9–18.† —MORRIS	Reviewed on Apple. Also for Atari; C 64/ 128. Joystick optional.	Unlimited warranty; backup included.	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★	E	★ ★ ★

RATINGS KEY **O** Overall performance: **D** Documentation: **EH** Error-handling: **GQ** Graphics quality: **EU** Ease of use: **V** Value for money: ★ Poor: ★★ Average: ★★★ Good: ★★★★ Excellent: N/A Not applicable: E Easy: A Average: D Difficult: † Longer review follows chart

GAMES REVIEWS BY JAMES DELSON

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	PS	GQ	EU	V
BALTIC 1985 Strategic Simulations, Inc. 883 Stierlin Road, Bldg. A-200 Mountain View, CA 94043 (415) 964-1200 $35 ©1984	The third game in SSI's "When Superpowers Collide" series places you in command of the forces assigned to forge and hold a corridor to reach your troops. Updated rules allow faster play; for 1–2 players ages 12+.	Reviewed on Apple. Also for C 64/128.	30-day warranty; $10 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★	D	★ ★ ★
INTELLECTUAL DECATHLON Muse Software 347 N. Charles St. Baltimore, MD 21201 (301) 659-7212 $40 ©1982	A series of brain-teasers for 1–6 players. Memorize and recall number strings, musical notes, pictures, word pairs, mazes, and more. Always new combinations for sharp minds. For ages 12+.	Apple.	Unlimited warranty; $10 for backup.	★ ★ ★	★ ★	★ ★ ★ ★	★ ★	D	★ ★ ★
OPERATION MARKET GARDEN Strategic Simulations (*See above for address and phone*) $50 ©1985	Exciting, yet heart-rending simulation of the abortive Allied attempt to end World War II by dropping 35,000 paratroopers behind German lines. First-rate war game for ages 12+.†	Reviewed on Apple. Also for Atari; C 64.	30-day warranty; $12 thereafter or for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★	D	★ ★
RACTER Mindscape, Inc. 3444 Dundee Road Northbrook, IL 60062 (312) 480-7667 $45 ©1985	*Racter* is the home version of a sophisticated artificial intelligence program. It can converse with you about almost anything. But be beware—it's totally wacky. For ages 10+.†	Reviewed on IBM PC. Also for Apple; Macintosh.	90-day warranty; $10 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★ ★	N/A	E	★ ★ ★
ROGUE Epyx 1043 Kiel Court Sunnyvale, CA 94089 (408) 745-0700 $27–$39 ©1985	Excellent role-playing strategy/ arcade game. Quest through 26 labyrinth levels, fighting monsters while developing your character. Once a character dies, you must start over again. For ages 10+.	Reviewed on IBM PC. Also for IBM PC*jr*; Macintosh.	90-day warranty; $5 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★	A	★ ★ ★
SPY VS SPY First Star Software, Inc. 18 E. 41st St. New York, NY 10017 (212) 532-4666 $30–$35 ©1984	Tantalizing game version of the *Mad* magazine comic strip. Spies search an embassy, gather necessary items, then escape. For 1–2 players ages 10+. Both gamers can participate at the same time.	Reviewed on C 64. Also for Apple; Atari. Joystick(s).	90-day warranty; $7 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★
SUPER BOWL SUNDAY Avalon Hill 4517 Harford Road Baltimore, MD 21214 (301) 254-9200 $35 ©1985	Play with one of 20 past Super Bowl teams. 1–2 gamers ages 12+ choose plays, decide which on-screen athletes will execute them, then watch fully animated teams play football.†	C 64. Joystick optional.	Unlimited warranty.	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★	A	★ ★ ★ ★
WINTER GAMES Epyx (*See above for address and phone*) $27–$39 ©1985	This third title in Epyx's Olympic sports/arcade series is as good as its predecessors. 1–8 players participate in 6 events. Lifelike graphics and a great play system. For ages 10+.†	Reviewed on C 64. Also for 64K Apple; C 128; Macintosh. Joystick.	90-day warranty; $5 thereafter.	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★	@	★ ★ ★
WISHBRINGER Infocom 125 CambridgePark Drive Cambridge, MA 02140 (617) 492-1031 $35–$40 ©1985	Become your small town's champion. Use your wits and a handy-dandy magic stone to solve an age-old mystery, and make the place fit again for decent folks. Splendid introductory text-only adventure suitable for ages 12+.	Reviewed on Apple. Also for Atari; C 64; IBM PC and compatibles; Macintosh; Tandy Model III.	90-day warranty; $5 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	D	★ ★
WIZARD OF WALL STREET Synapse 17 Paul Drive San Rafael, CA 94903 (415) 479-1170 $45 ©1985	Buy and sell stocks and stock options, get reports on companies you want to invest in, watch the ticker tape, and chart your progress. Three skill levels, for ages 12+.	Reviewed on IBM PC. Also for IBM XT/PC*jr* and compatibles.	90-day warranty; $7.50 thereafter.	★ ★ ★	★ ★	★ ★ ★	★ ★	D	★ ★

RATINGS KEY **O** Overall performance: **D** Documentation: **PS** Play system: **GQ** Graphics quality: **EU** Ease of use: **V** Value for money: ★ Poor: ★★ Average: ★★★ Good: ★★★★ Excellent: N/A Not applicable: E Easy: A Average: D Difficult: @ Easy to difficult, depending on event: † Longer review follows chart

WHAT'S IN STORE
SOFTWARE REVIEWS

On the following pages, you'll find in-depth reviews of some of the programs listed in the Software Guide. Refer back to the Guide on page 88 for information such as backup policies and addresses of software publishers.

HOME BUSINESS & PRODUCTIVITY

Bank Street Mailer

HARDWARE REQUIREMENTS: 128K Apple IIe/IIc. Separate version for 64K Apple.
PUBLISHER: Broderbund Software
PRICE: $70

Bank Street software has a reputation for ease of use and uncluttered, functional design. This latest *Bank Street* entry, a combination letter-writing and mailing-list program, lives up to the high standards set by its predecessors.

Thanks to a well-organized, interactive tutorial on the flip side of the program disk, getting started is easy. To make the most of the program's features, read the clear and logical manual. Finally, on-screen help is readily available while using the program.

A specialized writing program within *Bank Street Mailer* expedites your correspondence. Essential word-processing functions are augmented by an on-screen menu which inserts the basic parts of a letter—the opening, closing, date, and return address—with a single keystroke.

The mailing-list program offers nine easy, preset categories (first name, last name, company, address, etc.). You can also employ the mailing list as a data base by adding up to six categories to each record. Include anything—from birthdays and pets' names to credit histories and an accounts-receivable status—and then merge that information into your correspondence.

Simple commands let you sort through your information. Print out the desired records in a variety of formats: labels, envelopes, or reports.

Here's how the mail-merge function works: By including the category names from your mailing list between brackets in the text of your letter (for example, <FIRST> for first name), the program automatically "fills in the blanks" with the exact information in each personalized letter.

But the question lingers: Do you need this program? *Bank Street Mailer* is quite good at what it does, but it can't substitute for a full-featured word processor or more flexible data-base software. Both applications are already available in *Bank Street Writer* and *Bank Street Filer*, and both swap files back and forth easily. However, if you want to produce form letters tailored for your small business or personal correspondence, *Bank Street Mailer* will do the job nicely.

—STEVE MORGENSTERN

WillWriter

HARDWARE REQUIREMENTS: Apple; C 64/128; IBM PC/PC*jr*; Macintosh.
PUBLISHER: Nolo Press
PRICE: $40

Like many people, I tend to procrastinate when taking care of certain serious personal affairs. Drawing up a will fits into that category. My husband and I talked about changing our wills since they were already 10 years old (with several items no longer applicable), but did nothing about it.

WillWriter seems to have arrived at the right time for us. From Nolo Press, a company that specializes in legal self-help, this is not software you'll use on a steady basis. Once your initial will is drawn up, the program may be used only for revision. However, the total cost will still be less than the average attorney's fee for will-writing. And even if your will involves matters more complicated than usual, the program can assist you.

While using *WillWriter*, I expected to deal with screens full of legal jargon. To my relief, I found that the instructions and program prompts were written in clear English. At one point, I decided to change previously entered material. Going back was as simple as pressing "B." This showed me all my entries step by step. When I got an important phone call and had to quit half-way through the program, *WillWriter* automatically saved all of the information I had entered. And when I returned to the program, it restarted where I had left off.

Upon completion, I viewed the full document on the monitor. I could then make any corrections needed. The printout of the will even included a place for a notary public's seal.

The jargon-free, on-screen language is continued in the manual,

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CIRCLE READER SERVICE 39

which covers all legal aspects of the generally uniform language of wills. (This program is designed for use in all states except Louisiana.) You'll find information in the manual regarding estate planning, updating wills, and understanding legal terminology.

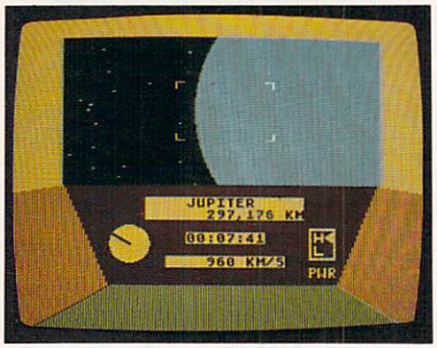
Nolo Press offers a 30-day refund option if you are not satisfied with the product and free update information for a two-year period. *Will-Writer* is an excellent addition to anyone's home-productivity library.

—JUDITH ZORNBERG

EDUCATION/FUN LEARNING

The Halley Project

HARDWARE REQUIREMENTS: Amiga; Apple; Atari; C 64/128.
PUBLISHER: Mindscape, Inc.
PRICE: $40–$45
PUBLISHER'S SUGGESTED AGES: 10+



If your family can't fly to Bermuda to view Halley's comet, here's an alternative you'll love. Combined with a pair of binoculars in the backyard, *The Halley Project* can familiarize your whole family with our solar system. At the same time, budding star pilots will get a chance to show their stuff while they navigate vast voids, orbit planets, and make spectacular landings on barren moons.

After you listen to a preliminary briefing on a cassette tape, load the disk. You are immersed in space on the first of 10 missions. The spaceship's computer indicates where and how far away the sun, planets, and Halley's comet lie. "Viewscreens" show the constellations much as they appear in our night sky, without artificial overlays, such as a fish for Pisces, to spoil the simulation. Navigation is largely visual, so the sooner you learn the constellations, the better.

To complete all 10 missions in the least possible time, you'll need to know information such as which planets don't have an atmosphere and which moons do. The documentation suggests several good sources for your research. When all the missions are accomplished, the program generates a code number. Send that number to the program's publisher for a free, secret eleventh mission!

The Halley Project reinforces learning by encouraging players to find facts in books, rather than from online data which is spoon fed to them. As a game, *The Halley Project* is an effective teaching model since planetary rotation, orbital motion, the effects of gravity, and the relative sizes of planets are shown accurately. Here's another excellent program from the designers at Tom Snyder Productions.

—TAN A. SUMMERS

Leaps and Bounds

HARDWARE REQUIREMENTS: Apple; Atari; C 64/128; IBM PC/PC*jr*.
PUBLISHER: Muse Software
PRICE: $40
PUBLISHER'S SUGGESTED AGES: 3–8

Toddler-friendly software? Why not? *Leaps and Bounds* helps youngsters learn to match letters with pictures, count objects, or have fun with art and music.

Three-year-old Todd liked the counting game best. The action starts as soon as the game is selected, with numbers flying into place one by one from a corner of the screen. Objects, ready for counting, then appear. When Todd chose the right number, the picture came to life with glorious animation. If he was stuck for an answer, the program prompted him by moving the pointer to the correct number.

The alphabet game is less interactive, but is maybe more entertaining. The offbeat animation amused even older family members. A train doesn't just chug down a track, for instance: it zooms into the air for a takeoff.

Howard, age 8, preferred art and music. He composed tunes by pressing keys on the computer or by using the joystick to tickle the ivories of an on-screen piano keyboard. Notes appeared on a staff below the keyboard. A "tape recorder" in the corner of the screen recorded the tune for playback when he was done.

Artwork also gets recorded. Howard was delighted when the program played back his Halloween drawing, step by step, "including mess-ups." This section allows freehand drawing using colored chalk, and lets you add ready-made objects, letters, and numbers to the on-screen picture.

At our house, we like software that everyone can enjoy, but that's a hard bill to fill. *Leaps and Bounds* is one of the few programs simple enough for little Todd, yet still entertaining for the rest of us.

—TAN A. SUMMERS

Wally's Word Works: The Parts of Speech Game

HARDWARE REQUIREMENTS: Apple; Atari; C 64/128.
PUBLISHER: Sunburst Communications
PRICE: $69
PUBLISHER'S SUGGESTED AGES: 9–18

Believe it or not, *Wally's Word Works* makes the parsing of sentences into an enjoyable game!

At your direction, Wally the wallaby hops around picking up words from a sentence displayed on-screen. He then drops them in baskets representing the nine basic parts of speech: noun, verb, article, preposition, etc. Every time you correctly identify a word's part of speech, you earn points. When you're stumped, the answer is eventually shown and the word is retired from play. But watch out for the "rovers," creatures trying to catch Wally when he isn't carrying a word.

A clear and instructive demo makes the game easy to start. If

parsing an entire sentence is a problem, you can replay it up to five times. Each $69 package includes disks (student, teacher, and backup) designed for a specific reading level. Different levels, from grades four to 12, can be purchased for $15 each.

You can also customize *Wally's Word Works* to suit your kids' needs. Add new sentences, reduce the number of parts of speech a player must identify, or eliminate the rovers to make it easier for beginners.

There are a few drawbacks. Since the package was designed primarily for school use rather than home, the cost is steep. Moreover, the documentation was written for parents and teachers. Our 13-year-old found the manual hard to understand and needed a little assistance until he got the game's idea.

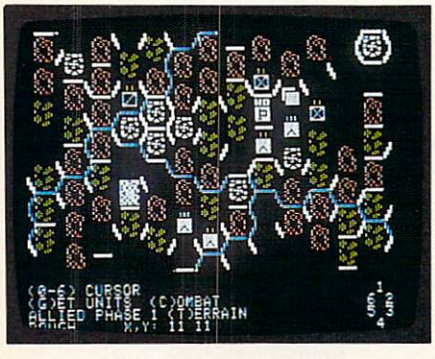
Of course, *Wally's Word Works* isn't for everybody. But it would be hard to imagine a better approach for practice in identifying parts of speech. —TONY MORRIS

GAMES

Operation Market Garden

HARDWARE REQUIREMENTS: Apple; Atari; C 64.
PUBLISHER: Strategic Simulations, Inc.
PRICE: $50
CRITIC'S SUGGESTED AGES: 12+

Few feats of arms have been as heroic or as futile as the siege of 35,000 British paratroopers who held the Dutch town of Arnhem during Operation Market Garden in 1944. There the Nazi forces temporarily halted the Allied drive to the Rhine.



Recreate this famous event in detail with SSI's *Operation Market Garden*. One to two players command the actual units that participated in the offensive. It's a superb game, with many features not found

CIRCLE READER SERVICE 56

HOW TO TAME YOUR INFORMATION

TEAM-MATE, WRITE FILE, and HOME OFFICE are fully integrated software programs designed to manage your data so you can whip thousands of names and numbers into shape.

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in other war simulations. These features include choosing paratrooper drop zones, plotting artillery barrages, building and destroying bridges, determining the size of units, and picking supply drops for the troops behind enemy lines.

The Allies must fight their way to Arnhem to relieve the relatively small force attempting to seize and hold the bridges there. At each turn, you can feel the weight of command as your digital men give their lives to carry out nearly impossible orders.

This was one of the games where playtesters used textbooks, maps, and other materials to research the simulation's historical background. We even watched a videotape of the film version of Operation Market Garden, *A Bridge Too Far*, which was a real inspiration for the Allied players. It's a first-rate war game for intermediate to advanced players, age 12 or older.

Racter

HARDWARE REQUIREMENTS: Apple; IBM PC; Macintosh.
PUBLISHER: Mindscape, Inc.
PRICE: $45
CRITIC'S SUGGESTED AGES: 10+

Years ago when I was the film and television critic at *Omni* magazine, my editor rushed excitedly into my office. He had just witnessed the demonstration of a mainframe-computer artificial-intelligence program called *Racter*. The program, he explained, could write prose, poetry, and songs, as well as hold interesting—if strange—conversations. Over the intervening years, I have eagerly followed *Racter*'s progress. I am pleased to report that there is a modified version now available for the home market.

What can you say about a program that can talk, show a little common sense, and even serve as the ideal party guest? This is the first home "artificial-insanity" program. *Racter* produces English sentences that are structurally sound and grammatically correct, but usually quite weird in content.

For example, I asked *Racter*, "Do you think computer programs are here to stay?" Its response? "I do not. Think computer programs are here to stay, that is. Thinking is like reckoning. You must be a soft human. I must confess that I'm crazy. Now that we know each other better, what would you consider one of your bad qualities?"

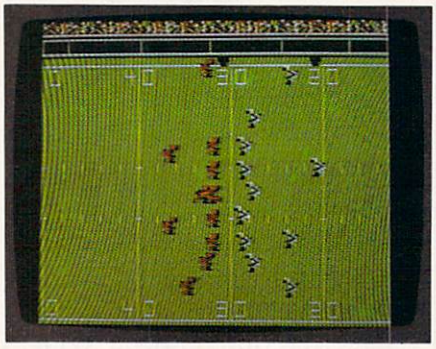
The fun you can have with *Racter* is limited only by your sense of humor and inventiveness since it is capable of having open-ended conversations without difficulty. It will also write stories, recall "experiences," and remember "acquaintances" with world figures throughout history.

Although *Racter* is the hottest artificial-intelligence program around, it won't be the last. For just as *Pong* began the arcade craze in the early '70s, we can expect *Racter* to be one of the "granddaddys" of many more such programs in the future. For age 10 and up (younger with adult supervision).

Super Bowl Sunday

HARDWARE REQUIREMENTS: C 64.
PUBLISHER: Avalon Hill
PRICE: $35
CRITIC'S SUGGESTED AGES: 12+

Th[illegible] the first full-scale, animated, sp[illegible]rategy game we've tried. *Super [illegible]owl Sunday* is an excellent football simulation that relies on the true-life abilities of teams and players for realistic action in an exciting play system.

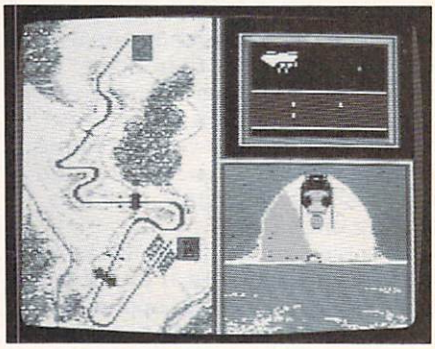


Until now, sports-statistics games have been intellectually stimulating but visually drab or limited. But in *Super Bowl Sunday*, one to two gamers coach one or two (out of 20) past Super Bowl teams. You formulate tactics and choose plays, then decide who will execute them and watch fully animated teams carry them out.

Each down involves a number of decisions chosen from a menu-driven system. Both offense and defense can pick their formations. Then the offense runs, passes, or kicks. You can designate who will be your quarterback, receiver, or runner by referring to stats on proven player abilities. The defense then sets up; again, based on real performance records. The computer completes each play with beautifully animated 11-athlete teams running on a full-screen picture. Here's one of the best sports simulations to date for age 12 and up.

Winter Games

HARDWARE REQUIREMENTS: Apple; C 64/128; Macintosh.
PUBLISHER: Epyx Software
PRICE: $27–$39
CRITIC'S SUGGESTED AGES: 10+



The third in Epyx's Olympic sports/arcade series, *Winter Games* is as well-produced as the two summer versions. Up to eight players have unlimited practice sessions for the sometimes difficult skills required. Then you can choose which country you represent in the Games.

You elect to participate in one to seven events: figure skating, freestyle skating, speed skating, the biathalon (cross-country skiing interspersed with target shooting), hot-dog aerial ski jumps, traditional ski jumps, and a fast bobsled run.

Each event calls on gamers to use different, coordinated joystick movements. In the figure-skating event, for instance, you "choreograph" a lithe young skater to move through the program's musical accompaniment. You put her through the paces, executing seven required moves in three minutes to the strains of a classical tune. This is the first time we've seen such graceful movements in a game program. The feeling of pride I felt after accomplishing the rigorous leaps and spins was one of the high points in my gaming experiences.

This superb game has beautifully detailed, lifelike graphics and a knockout play system. *Winter Games*' lengthy musical score is absolutely state of the art in creative uses of music for gaming. Suitable for age 10 and over.

—REVIEWS BY JAMES DELSON

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